

Access DB# 138929

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 11-29-04  
 Art Unit: 1752 Phone Number 302-1333 Serial Number: 10/085,935  
 Mail Box and Bldg/Room Location: 9D66 Results Format Preferred (circle) PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Please see Bib. sheet

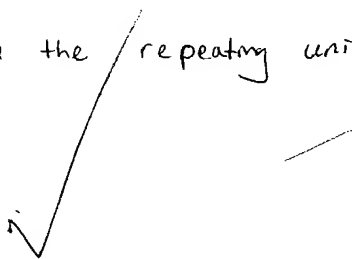
Inventors (please provide full names): \_\_\_\_\_  
 SCIENTIFIC REFERENCE BR  
 Sci & Tech. Info. Cntr

Earliest Priority Filing Date: \_\_\_\_\_ NOV 30

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number. Pat. & T.M. Office

Please search for the polymer of claim #1

which has the repeating unit of (1)



\*\*\*\*\*

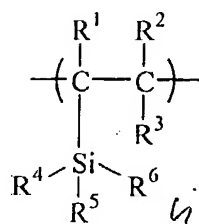
## STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>EA</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: <u>12-2-04</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____

This listing of claims will replace all prior versions, and listings, of claims in the application:

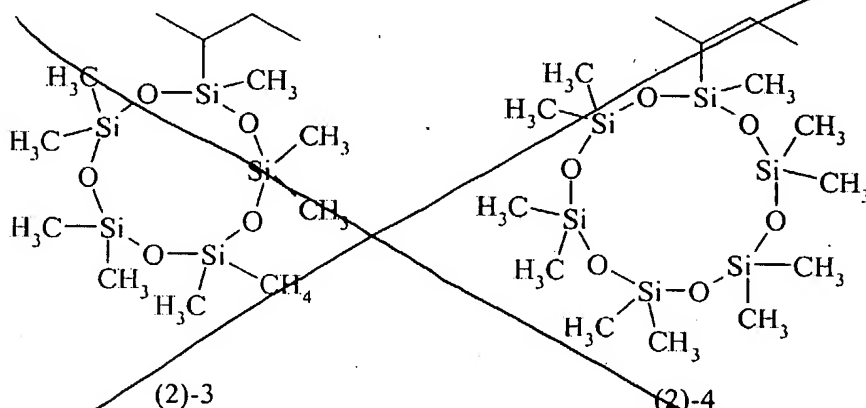
**Listing of Claims:**

Claim 1 (Currently Amended): A silicon-containing polymer comprising recurring units of ~~10~~  
~~least one of the following general formulae (1), (2), (3), (4) and (5)~~



(1)

wherein R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> each are hydrogen or a straight, branched or cyclic alkyl group of 1 to 10 carbon atoms, R<sup>4</sup> is a silicon-containing group attached to the silicon atom through a silalkylene linkage, R<sup>5</sup> and R<sup>6</sup> each are independently an alkyl or haloalkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms or a silicon-containing group attached to the silicon atom through a siloxane or silalkylene linkage,





## UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
UNITED STATES PATENT AND TRADEMARK OFFICE  
WASHINGTON, D.C. 20231  
www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 4343

<b>SERIAL NUMBER</b> 10/085,935	<b>FILING DATE</b> 03/01/2002 <b>RULE</b>	<b>CLASS</b> 430	<b>GROUP ART UNIT</b> 1752	<b>ATTORNEY DOCKET NO.</b> KOJIM-448
<b>APPLICANTS</b> Takanobu Takeda, Nakakubiki-gun, JAPAN; Jun Hatakeyama, Nakakubiki-gun, JAPAN; Toshinobu Ishihara, Nakakubiki-gun, JAPAN; Tohru Kubota, Nakakubiki-gun, JAPAN; Yasufui Kubota, Nakakubiki-gun, JAPAN;				
<b>** CONTINUING DATA *****</b> None S.T.L.				
<b>** FOREIGN APPLICATIONS *****</b> JAPAN 2001-056543 03/01/2001 S.T.L.				
<b>IF REQUIRED, FOREIGN FILING LICENSE GRANTED</b> ** 03/22/2002				
Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after met <input checked="" type="checkbox"/> Allowance <input type="checkbox"/> No		<b>STATE OR COUNTRY</b> JAPAN	<b>SHEETS DRAWING</b> 2	<b>TOTAL CLAIMS</b> 12
Verified and Acknowledged Examiner's Signature <i>[Signature]</i> Initials S.T.L.		<b>INDEPENDENT CLAIMS</b> 1		
<b>ADDRESS</b> 23599				
<b>TITLE</b> Silicon-containing polymer, resist composition and patterning process				
<b>FILING FEE RECEIVED</b> 1092	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees ( Filing ) <input type="checkbox"/> 1.17 Fees ( Processing Ext. of time ) <input type="checkbox"/> 1.18 Fees ( Issue ) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit	

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FILE 'REGISTRY' ENTERED AT 20:08:07 ON 02 DEC 2004  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2004 American Chemical Society (ACS)

=> d his

FILE 'LREGISTRY' ENTERED AT 19:43:08 ON 02 DEC 2004

L1 STR  
 L2 STR L1  
 L3 STR  
 L4 STR

FILE 'REGISTRY' ENTERED AT 19:57:46 ON 02 DEC 2004

L5 SCR 2043  
 L6 37 S L1 AND L5  
 L7 1346 S L1 AND L5 FUL  
 SAV L7 LEE935A/A  
 L8 2 S L2 SSS SAM SUB=L7  
 L9 40 S L2 SSS FUL SUB=L7  
 SAV L9 LEE935B/A  
 L10 1 S L3 AND L4 SSS SAM SUB=L7  
 L11 21 S L3 AND L4 SSS FUL SUB=L7  
 SAV L11 LEE935C/A

FILE 'ZCAPLUS' ENTERED AT 20:06:31 ON 02 DEC 2004

L12 23 S L9  
 L13 16 S L11

FILE 'REGISTRY' ENTERED AT 20:08:07 ON 02 DEC 2004

=> d l9 que stat

L1 STR

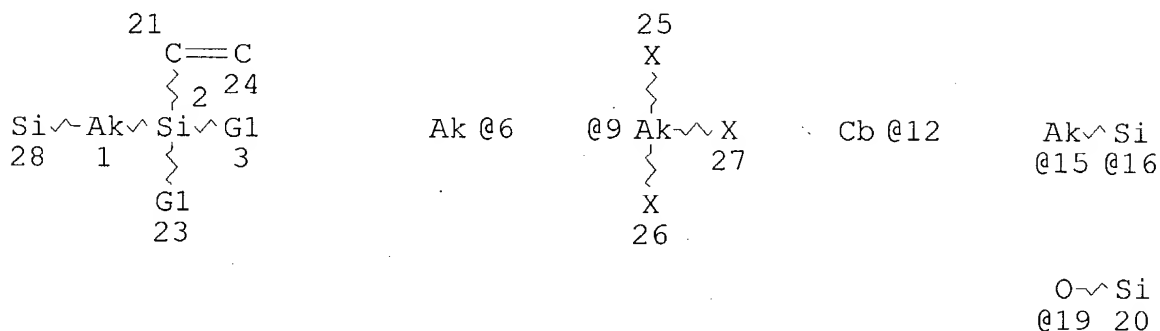
21		25			
C=C		X			
{ 2 24		{			
G1^Si^G1	Ak @6	@9 Ak~X	Cb @12	Ak^Si	O~Si
1 { 3		{ 27		@15 @16	@19 20
G1		X			
23		26			

VAR G1=6/9/12/15/16/19  
 NODE ATTRIBUTES:

CONNECT IS E1 RC AT 6  
 CONNECT IS E2 RC AT 15  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS SAT AT 6  
 GGCAT IS UNS AT 12  
 GGCAT IS SAT AT 15  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE  
 L2 STR



VAR G1=6/9/12/15/16/19

NODE ATTRIBUTES:

CONNECT IS E2 RC AT 1  
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 CONNECT IS E2 RC AT 15  
 DEFAULT MLEVEL IS ATOM  
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 GGCAT IS SAT AT 6  
 GGCAT IS UNS AT 12  
 GGCAT IS SAT AT 15  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

L5 SCR 2043  
 L7 1346 SEA FILE=REGISTRY SSS FUL L1 AND L5  
 L9 40 SEA FILE=REGISTRY SUB=L7 SSS FUL L2

100.0% PROCESSED 1053 ITERATIONS

40 ANSWERS

SEARCH TIME: 00.00.01

=&gt; file zcaplus

FILE 'ZCAPLUS' ENTERED AT 20:08:17 ON 02 DEC 2004

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

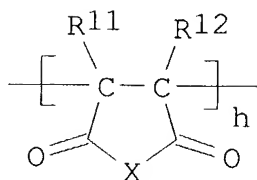
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

=&gt; d 112 1-23 cbib abs hitstr hitrn

L12 ANSWER 1 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

2004:876600 Document No. 141:372757 Silicon-containing polymer compound, resist material, and patterning method. Hatakeyama, Jun; Takeda, Takanobu; Ishihara, Toshinobu (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho (JP) 2004292781 A2 20041021, 52 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-150236 20030528. PRIORITY: JP 2002-192866 20020702; JP 2003-27804 20030205.

GI



AB Disclosed is the silicon-contg. polymer compd. having repeating units represented by  $[R_1C(SiR_4R_5R_6)-CR_2R_3]_a$ , I, and  $[H_2C-C(CH_2COOR_8)(COOR_7)]_c$  ( $R_1-3 = H$ ,  $C1-10$  alkyl;  $R_4-6 = C1-20$  alkyl, haloalkyl, etc.;  $R_7,8 = H$ ,  $C1-10$  alkyl, acid-unstable group; and  $a, b, c = \text{integer}$ ). Also disclosed is the process involving plasma etching using a halogen gas such as  $Br_2$  and  $Cl_2$  after the formation of a pattern.

IT 779336-32-2P 779336-34-4P 779336-41-3P  
779336-42-4P

(silicon-contg. polymer compd. for resist material)

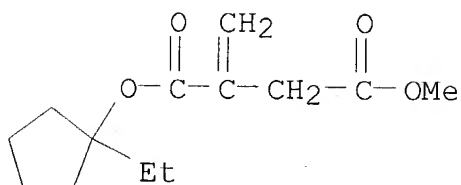
RN 779336-32-2 ZCAPLUS

CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester, polymer with [(ethenyldimethylsilyl)methyl]trimethylsilane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 648895-32-3

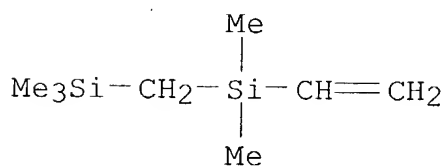
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CM 2

CRN 18291-20-8

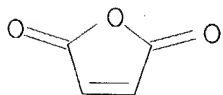
CMF C8 H20 Si2



CM 3

CRN 108-31-6

CMF C4 H2 O3



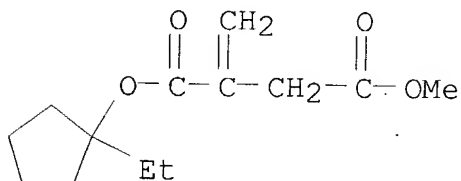
RN 779336-34-4 ZCAPLUS

CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester, polymer with ethenylmethylbis[(trimethylsilyl)methyl]silane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 648895-32-3

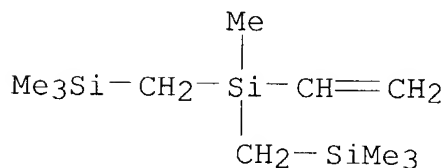
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CM 2

CRN 16709-90-3

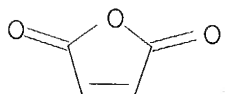
CMF C11 H28 Si3



CM 3

CRN 108-31-6

CMF C4 H2 O3



RN 779336-41-3 ZCAPLUS

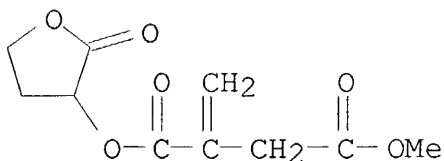
CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester,  
polymer with [(ethenyldimethylsilyl)methyl]trimethylsilane and  
4-methyl 1-(tetrahydro-2-oxo-3-furanyl) methylenebutanedioate (9CI)  
(CA INDEX NAME)

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CRN 779336-40-2

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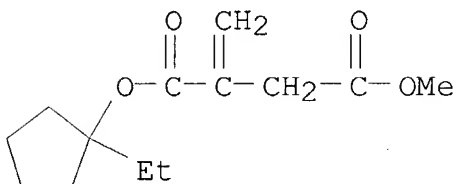




CM 2

CRN 648895-32-3

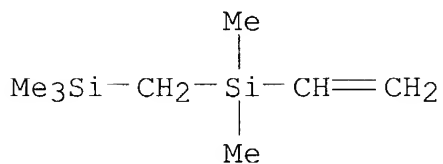
CMF C13 H20 O4



CM 3

CRN 18291-20-8

CMF C8 H20 Si2



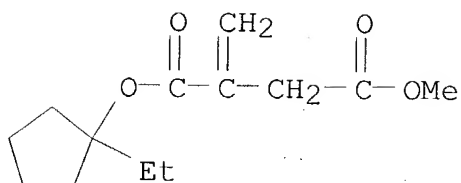
RN 779336-42-4 ZCAPLUS

CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester,  
 polymer with dihydro-3-methylene-2,5-furandione and  
 [(ethenyldimethylsilyl)methyl]trimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 648895-32-3

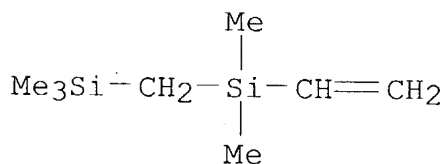
CMF C13 H20 O4



CM 2

CRN 18291-20-8

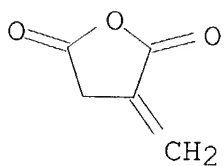
CMF C8 H20 Si2



CM 3

CRN 2170-03-8

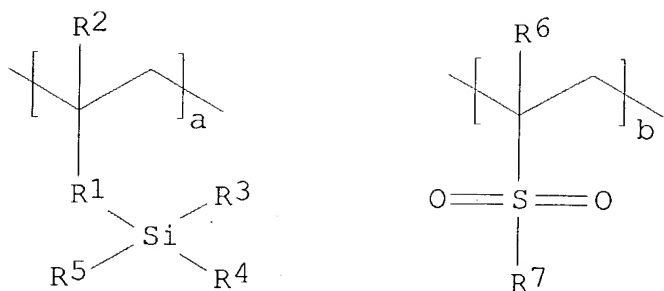
CMF C5 H4 O3



IT 779336-32-2P 779336-34-4P 779336-41-3P  
779336-42-4P  
(silicon-contg. polymer compd. for resist material)

L12 ANSWER 2 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2004:59649 Document No. 140:136424 Silicon-containing polymer,  
photoresist composition and patterning process. Hatakeyama, Jun;  
Takeda, Takanobu; Ishihara, Toshinobu (Japan). U.S. Pat. Appl.  
Publ. US 2004013980 A1 20040122, 36 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2003-611261 20030702. PRIORITY: JP 2002-192910  
20020702.

GI



I

AB The present invention relates to silicon-contg. polymers comprising recurring units of I (R1 = single bond, alkylene; R2 = hydrogen, alkyl; R3-5 = alkyl, haloalkyl, aryl or silicon-contg. group; R6 = hydrogen, Me, cyano or -C(=O)OR8; R8 = hydrogen, alkyl, acid labile group; R7 = alkyl, -NR9R10, -OR11; R9-11 = hydrogen or alkyl; a, b = pos. nos. satisfying 0 < a+b ≤ 1). Resist compns. comprising the polymers are sensitive to high-energy radiation and have a high sensitivity and resolu. at a wavelength of less than 300 nm and improved resistance to oxygen plasma etching.

IT 648895-25-4P 648895-26-5P

(silicon-contg. polymer, resist compn. for patterning process)

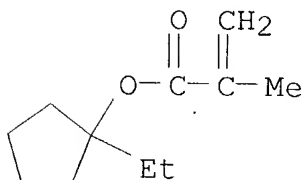
RN 648895-25-4 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with [(ethenyldimethylsilyl)methyl]trimethylsilane and methyl ethenesulfonate (9CI) (CA INDEX NAME)

CM 1

CRN 266308-58-1

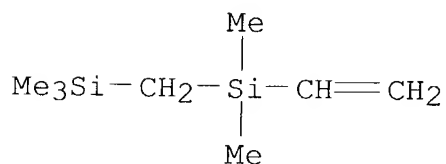
CMF C11 H18 O2



CM 2

CRN 18291-20-8

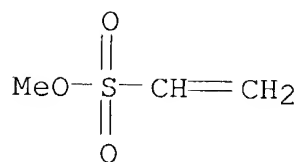
CMF C8 H20 Si2



CM 3

CRN 1562-31-8

CMF C3 H6 O3 S



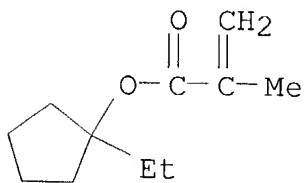
RN 648895-26-5 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with  
ethenylmethylbis[(trimethylsilyl)methyl]silane and methyl  
ethenesulfonate (9CI) (CA INDEX NAME)

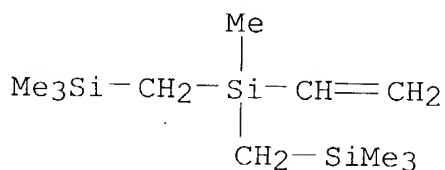
CM 1

CRN 266308-58-1

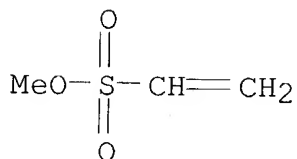
CMF C11 H18 O2



CM 2

CRN 16709-90-3  
CMF C11 H28 Si3

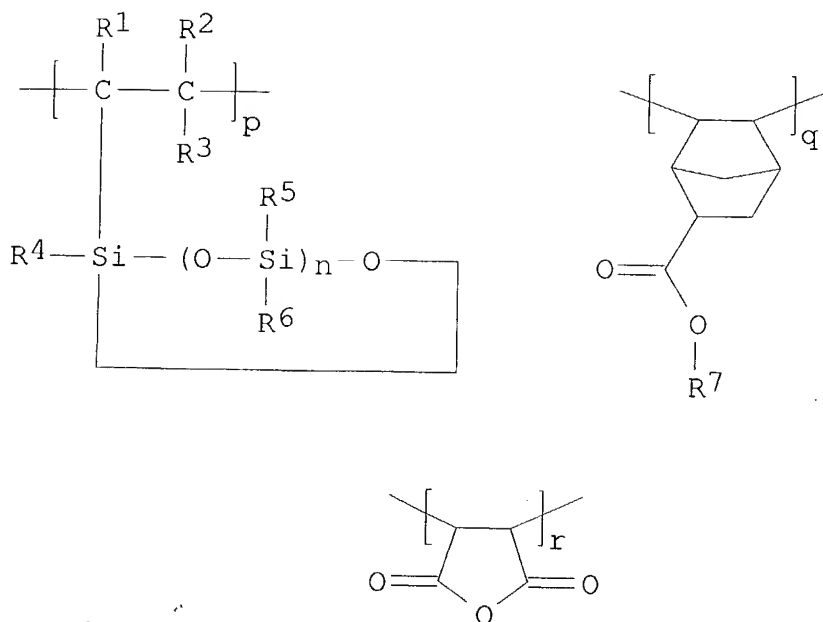
CM 3

CRN 1562-31-8  
CMF C3 H6 O3 S

IT 648895-25-4P 648895-26-5P  
(silicon-contg. polymer, resist compn. for patterning process)

L12 ANSWER 3 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2004:20370 Document No. 140:84642 Silicon-containing polymer, resist  
composition and patterning process. Takeda, Takanobu; Hatakeyama,  
Jun; Ishihara, Toshinobu (Japan). U.S. Pat. Appl. Publ. US  
2004006191 A1 20040108, 20 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2003-611014 20030702. PRIORITY: JP 2002-192947  
20020702.

GI



I

AB The invention relates to silicon-contg. polymers comprising recurring units of three components represented by the general formula I (R1-3 = H, 1-10 alkyl; C4-6 = H, C 1-20 alkyl or haloalkyl, etc.; R7 = C 4-20 alkyl; n = 1-5; p, q, r = pos. no.) are novel. Resist compns. comprising the polymers are sensitive to high-energy radiation and have a high sensitivity and resolu. at a wavelength of less than 300 nm and improved resistance to oxygen plasma etching. 1.

IT 640728-41-2P

(silicon-contg. polymer, resist compn. and patterning process)

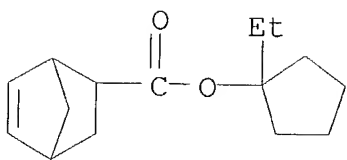
RN 640728-41-2 ZCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-ethylcyclopentyl ester, polymer with [2-(ethenyldimethylsilyl)ethyl]trimethylsilane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 279243-69-5

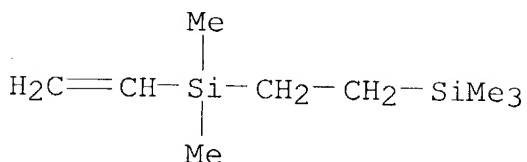
CMF C15 H22 O2



CM 2

CRN 23755-58-0

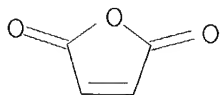
CMF C9 H22 Si2



CM 3

CRN 108-31-6

CMF C4 H2 O3



IT 640728-41-2P

(silicon-contg. polymer, resist compn. and patterning process)

L12 ANSWER 4 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 2003:482230 Document No. 139:197851 Synthesis of Silylene-Alkylene-Silylene-Vinylene Polymers via Catalytic Silylative Coupling (SC) Polycondensation. Marciniec, Bogdan; Malecka, Ewa; Scibiorek, Marek (Department of Organometallic Chemistry, Faculty of Chemistry, Adam Mickiewicz University, Poznan, 60-780, Pol.). Macromolecules, 36(15), 5545-5550 (English), [2003]. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB .alpha.,.omega.-Bis(vinyldimethylsilyl)alkanes of the general formula CH<sub>2</sub>:CH(CH<sub>3</sub>)<sub>2</sub>Si(CH<sub>2</sub>)<sub>n</sub>(CH<sub>3</sub>)<sub>2</sub>SiCH:CH<sub>2</sub> (where n = 1-4) undergo effective silylative coupling (SC) polycondensation, if catalyzed by

[RuCl<sub>2</sub>(PPh<sub>3</sub>)<sub>3</sub>] or [RuHCl(CO)(PPh<sub>3</sub>)<sub>3</sub>], giving linear polymers (M<sub>w</sub> = 7300-8500) contg. a mixt. of trans-1,2- and gem-fragments. But in the presence of [{RuCl<sub>2</sub>(CO)<sub>3</sub>}<sub>2</sub>] as a catalyst, highly stereoselective trans-tactic linear polymers are isolated (M<sub>w</sub> = 6200-9200). The products of both new processes cannot be synthesized via ADMET polymn. or ring-closing metathesis (RCM).

IT 137020-99-6P 159222-63-6P 583059-23-8P  
583059-24-9P 583059-25-0P 583059-28-3P  
583059-29-4P 583059-30-7P

(synthesis of silylene-alkylene-silylene-vinylene polymers via catalytic silylative coupling polycondensation)

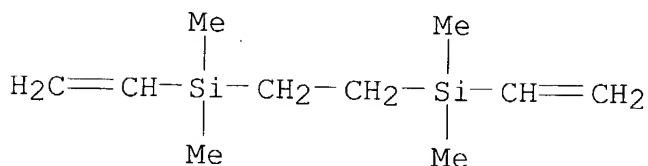
RN 137020-99-6 ZCAPLUS

CN Silane, 1,2-ethanediylbis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

CMF C10 H22 Si2



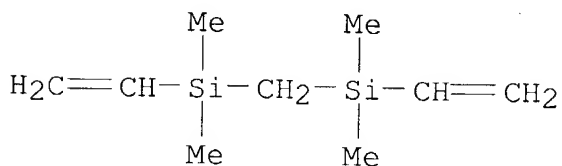
RN 159222-63-6 ZCAPLUS

CN Silane, methylenebis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 17865-60-0

CMF C9 H20 Si2



RN 583059-23-8 ZCAPLUS

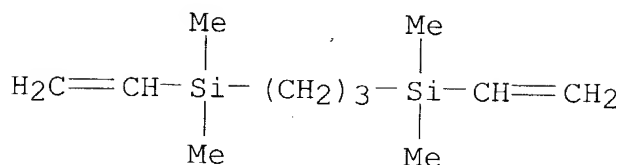
CN Silane, 1,3-propanediylbis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)



CM 1

CRN 84677-99-6

CMF C11 H24 Si2



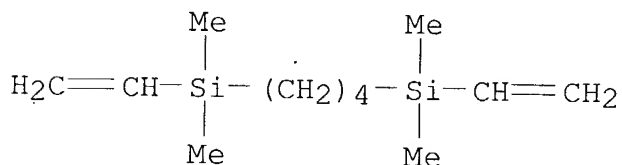
RN 583059-24-9 ZCAPLUS

CN Silane, 1,4-butanediylbis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

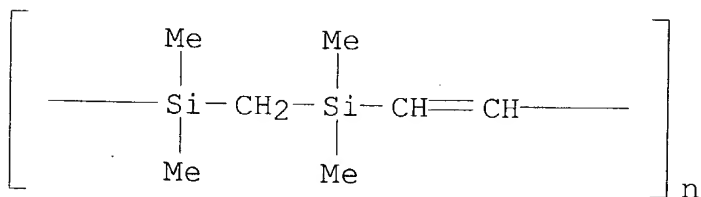
CRN 84678-00-2

CMF C12 H26 Si2



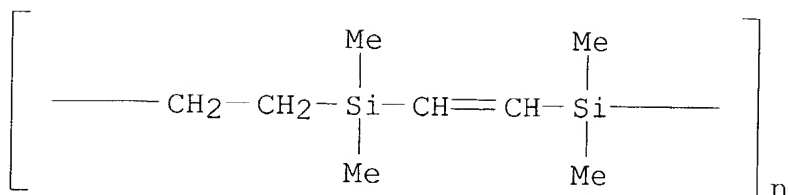
RN 583059-25-0 ZCAPLUS

CN Poly[(dimethylsilylene)methylene(dimethylsilylene)-(1E)-1,2-ethenediyl] (9CI) (CA INDEX NAME)



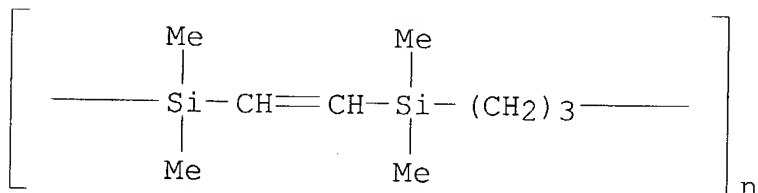
RN 583059-28-3 ZCAPLUS

CN Poly[(dimethylsilylene)-(1E)-1,2-ethenediyl(dimethylsilylene)-1,2-ethenediyl] (9CI) (CA INDEX NAME)



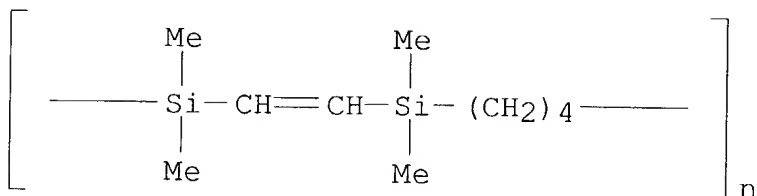
RN 583059-29-4 ZCAPLUS

CN Poly[(dimethylsilylene)-(1E)-1,2-ethenediyl(dimethylsilylene)-1,3-propanediyl] (9CI) (CA INDEX NAME)



RN 583059-30-7 ZCAPLUS

CN Poly[(dimethylsilylene)-(1E)-1,2-ethenediyl(dimethylsilylene)-1,4-butanediyl] (9CI) (CA INDEX NAME)



IT 137020-99-6P 159222-63-6P 583059-23-8P

583059-24-9P 583059-25-0P 583059-28-3P

583059-29-4P 583059-30-7P

(synthesis of silylene-alkylene-silylene-vinylene polymers via catalytic silylative coupling polycondensation)

L12 ANSWER 5 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

2003:27948 Document No. 138:304597 Synthesis of fluorinated copoly(carbosiloxane)s by Pt-catalyzed hydrosilylation copolymerization. Grunlan, M. A.; Mabry, J. M.; Weber, W. P. (D.P. and K.B. Loker Hydrocarbon Research Institute, Department of Chemistry, University of Southern California, Los Angeles, CA, 90089-1661, USA). Polymer, 44(4), 981-987 (English) 2003. CODEN:

POLMAG. ISSN: 0032-3861. Publisher: Elsevier Science Ltd..

AB A series of new 3,3,3-trifluoropropyl substituted copoly(carbosiloxane)s have been prepd. by Pt-catalyzed step-growth hydrosilylation copolymn. of 1,9-dihydrido-1,1,3,5,7,9,9-heptamethyl-3,5,7-tris(3',3',3'-trifluoropropyl)pentasiloxane (I) with various .alpha.,.omega.-divinylsilanes and siloxanes. The structures of the copoly(carbosiloxane)s have been detd. by <sup>1</sup>H, <sup>13</sup>C, <sup>29</sup>Si, and <sup>19</sup>F NMR as well as IR spectroscopy. The mol. wt. distributions (Mw/Mn) of the copolymers have been characterized by GPC and their thermal properties measured by DSC and TGA.

IT 473911-95-4P

(prepn. and characterization of fluorinated copoly(carbosiloxane)s by Pt-catalyzed hydrosilylation copolymn.)

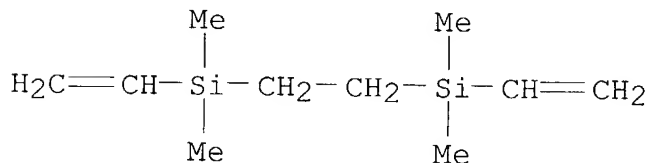
RN 473911-95-4 ZCAPLUS

CN Pentasiloxane, 1,1,3,5,7,9,9-heptamethyl-3,5,7-tris(3,3,3-trifluoropropyl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

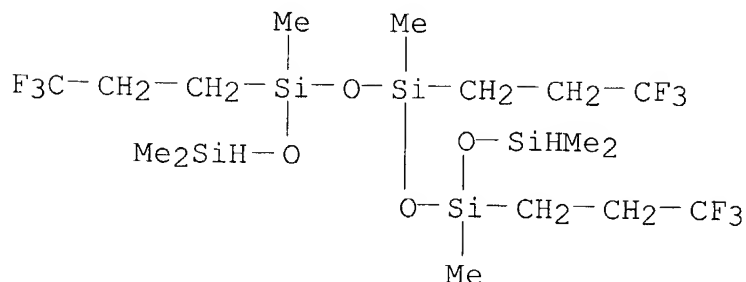
CMF C10 H22 Si2



CM 2

CRN 64426-47-7

CMF C16 H35 F9 O4 Si5



IT 473911-95-4P

(prepn. and characterization of fluorinated  
copoly(carbosiloxane)s by Pt-catalyzed hydrosilylation copolymn.)

L12 ANSWER 6 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2002:671932 Document No. 137:202031 Preparation and patterning process  
of silicon-containing chemical amplification positive resist  
compositions. Takeda, Takanobu; Hatakeyama, Jun; Ishihara,  
Toshinobu; Kubota, Tohru; Kubota, Yasufumi (Shin-Etsu Chemical Co.,  
Ltd., Japan). Eur. Pat. Appl. EP 1236745 A2 20020904, 33 pp.  
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,  
LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR.  
(English). CODEN: EPXXDW. APPLICATION: EP 2002-251419 20020228.  
PRIORITY: JP 2001-56543 20010301.

AB Novel silicon-contg. polymers, which are obtained by copolymg.  
vinylsilane with a compd. having a low electron d. unsatd. bond such  
as maleic anhydride, maleimide derivs. or tetrafluoroethylene, are  
suitable as the base resin in chem. amplified pos. resist compns.  
used for micropatterning in a process for the fabrication of  
semiconductor devices. The resist compns., which are sensitive to  
high-energy radiation, such as deep-UV light, laser beams, electron  
beams or X-rays, can form high aspect ratio patterns with high  
sensitivity and resolu. as well as improved resistance to oxygen or  
halogen gas plasma etching. Thus, maleic anhydride and  
trimethylvinylsilane were polymd. in THF using radical polymn.  
technique; the silicone polymer, photoacid generator, dissolu.  
inhibitor were thoroughly dissolved in propylene glycol monomethyl  
ether acetate; the resist soln. was spin coated onto cured  
DUV-30/novolac resist substrate and then baked at 100.degree. for 90  
s to form a resist film of 0.2 .mu.m, followed by exposing to laser  
beam, baking at 100.degree. for 90 s, and developing in TMAH to  
obtain a pos. pattern; the resist pattern was then evaluated in  
sensitivity, resolu., and etc.

IT 452912-32-2P, Maleic anhydride-bis(trimethylsilylmethyl)vinyl  
methoxysilane) copolymer 452912-34-4P, Maleic  
anhydride-bis(trimethylsilylmethyl)vinylmethoxysilane-1-  
ethylcyclopentyl methacrylate copolymer  
(cured and uncured; silicon-contg. chem. amplification pos.  
resist compns. and patterning process thereof)

RN 452912-32-2 ZCAPLUS

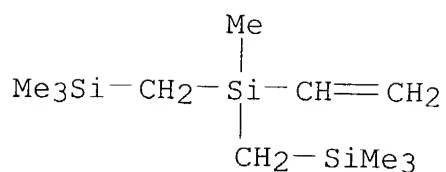
CN 2,5-Furandione, polymer with 4-ethenyl-2,2,4,6,6-pentamethyl-2,4,6-  
trisilaheptane (9CI) (CA INDEX NAME)

CM 1

CRN 16709-90-3

CMF C11 H28 Si3

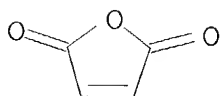
Applicants



CM 2

CRN 108-31-6

CMF C4 H2 O3



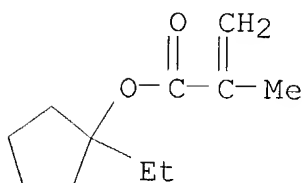
RN 452912-34-4 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with  
ethenylmethylbis[(trimethylsilyl)methyl]silane and 2,5-furandione  
(9CI) (CA INDEX NAME)

CM 1

CRN 266308-58-1

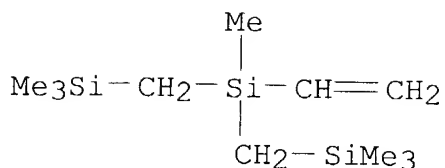
CMF C11 H18 O2



CM 2

CRN 16709-90-3

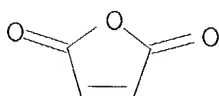
CMF C11 H28 Si3



CM 3

CRN 108-31-6

CMF C4 H2 O3



IT **452912-32-2P**, Maleic anhydride-bis(trimethylsilylmethyl)vinylmethylsilane) copolymer **452912-34-4P**, Maleic anhydride-bis(trimethylsilylmethyl)vinylmethylsilane-1-ethylcyclopentyl methacrylate copolymer  
(crued and uncured; silicon-contg. chem. amplification pos. resist compns. and patterning process thereof)

L12 ANSWER 7 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2002:626919 Document No. 137:338324 Synthesis of fluoroalkylsiloxane copolymer by Pt-catalyzed hydrosilylation polymerization. Grunlan, Melissa A.; Mabry, Joseph M.; Weber, William P. (K. B. and D. P. Loker Hydrocarbon Res. Inst., Dept. of Chemistry, Univ. of Southern California, Los Angeles, CA, 90089-1661, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 43(2), 1079-1080 (English) 2002. CODEN: ACPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.  
AB Herein we report the Pt-catalyzed hydrosilylation polymn. of 1,9-dihydrido-1,1,2,5,7,9,9-heptamethyl-3,5,7-tris(3',3',3'-trifluoropropyl)pentasiloxane (I) with 1,3-divinyldtetramethyldisiloxane (II) or 1,2-bis(vinyldimethylsilyl)ethane (III). These reactions produced alternating copolymers.

IT **473911-95-4P**  
(synthesis of fluoroalkylsiloxane copolymer by Pt-catalyzed hydrosilylation polymn.)

RN 473911-95-4 ZCAPLUS

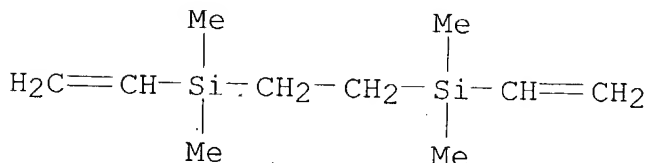
CN Pentasiloxane, 1,1,3,5,7,9,9-heptamethyl-3,5,7-tris(3,3,3-trifluoropropyl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsil

ane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

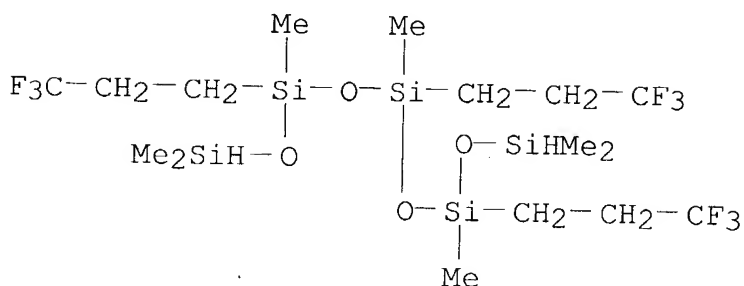
CMF C10 H22 Si2



CM 2

CRN 64426-47-7

CMF C16 H35 F9 O4 Si5



IT 473911-95-4P

(synthesis of fluoroalkylsiloxane copolymer by Pt-catalyzed hydrosilylation polymn.)

L12 ANSWER 8 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1998:687653 Document No. 130:4127 Cyclopolymerization behavior of bis(dimethylvinylsilyl)methane. Suga, Yasuhiro; Oku, Jun-Ichi; Takaki, Mikio (Department of Applied Chemistry, Nagoya Institute of Technology, Nagoya, 466-8555, Japan). Polymer Journal (Tokyo), 30(10), 790-796 (English) 1998 CODEN: POLJB8. ISSN: 0032-3896. Publisher: Society of Polymer Science, Japan.

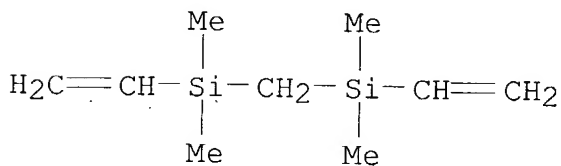
AB Anionic cyclopolymerization of bis(dimethylvinylsilyl)methane (BVSM) in hexane, which affords a polymer having six-membered rings as repeating cyclic units, is investigated. Low polymer yields in the polymerization of BVSM with n-BuLi in the absence of N,N,N',N'-

tetramethylethylenediamine (TMEDA) are attributed to crosslinking reactions and assocn. of the propagating ends at -10.degree. and elimination of lithium hydride from the propagating end at 40.degree.. Polymn. with n-BuLi/TMEDA is accompanied, though not frequently, by the abstraction of the methylene proton interposed by two silicon atoms, which forms an inactive anion. This abstraction is caused by the propagating end in the six-membered ring. At high monomer concn., 0.5 mol L<sup>-1</sup>, a crosslinking reaction is not negligible even in the presence of TMEDA. As initiators, n-, sec-, and tert-BuLi are examd., and only s-BuLi/TMEDA is found to cause the proton abstraction from the methylene interposed by two silicon atoms. The effects of the initiator are explained by the nucleophilicity of BuLi and the steric hindrance in the abstraction. The effects of three amines on the polymn. are evaluated. TMEDA is the most suitable for the cyclopolymn. of BVSM.

IT 159222-63-6P, Bis(dimethylvinylsilyl)methane homopolymer  
(anionic cyclopolymn. behavior of bis(dimethylvinylsilyl)methane)  
RN 159222-63-6 ZCAPLUS  
CN Silane, methylenebis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 17865-60-0  
CMF C9 H20 Si2



IT 159222-63-6P, Bis(dimethylvinylsilyl)methane homopolymer  
(anionic cyclopolymn. behavior of bis(dimethylvinylsilyl)methane)

L12 ANSWER 9 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
1998:19410 Document No. 128:75773 Metalation and functionalization of poly[bis(dimethylvinylsilyl)methane]. Suga, Yasuhiro; Murai, Yoshiko; Saito, Isao; Oku, Jun-ichi; Takaki, Mikio (Dep. of Applied Chemistry, Nagoya Institute of Technology, nagoya, 466, Japan). Kobunshi Ronbunshu, 54(12), 939-946 (Japanese) 1997. CODEN: KBRBA3. ISSN: 0386-2186. Publisher: Kobunshi Gakkai.  
AB Metalation of poly[bis(dimethylvinylsilyl)methane] (poly(BVSM)), which contains six-membered ring as a repeating cyclic unit, was investigated by using several metalating systems. The metalation, the proton abstraction from the methylene group at the



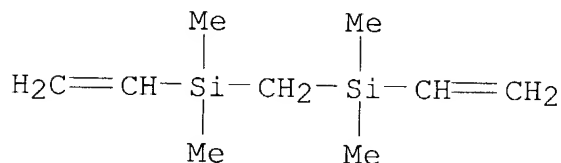
.alpha.-position of two silicon atoms by a metalating reagent, occurred with sec-butyllithium (sec-BuLi)/potassium tert-butoxide (tert-BuOK) (1:1 mol/mol) in THF at -78.degree. and that methylene protons in 40-50% of BVSM units underwent the metalation. The degree of metalation was little influenced by the difference in the mol. wt. of poly(BVSM) in the range of 2400 to 16,000. A two-fold molar quantity of sec-BuLi/tert-BuOK to BVSM units was sufficient for the metalation of poly(BVSM). Dimethylvinylsilyl and chloromethyldimethylsilyl groups were introduced into the polymer through further chem. conversions of the resulting polyanion.

IT 159222-63-6DP, metalated, reaction products with methanol or silanes  
 (metalation and functionalization of  
 poly[bis(dimethylvinylsilyl)methane])  
 RN 159222-63-6 ZCAPLUS  
 CN Silane, methylenebis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)]

CM 1

CRN 17865-60-0

CMF C9 H20 Si2

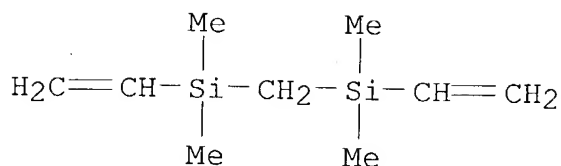


IT 159222-63-6P, Bis(dimethylvinylsilyl)methane homopolymer  
 (metalation and functionalization of  
 poly[bis(dimethylvinylsilyl)methane])  
 RN 159222-63-6 ZCAPLUS  
 CN Silane, methylenebis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)]

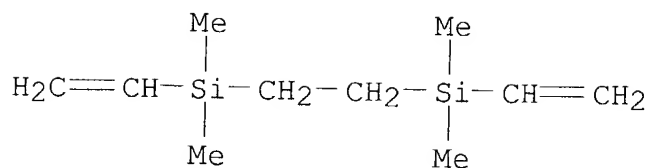
CM 1

CRN 17865-60-0

CMF C9 H20 Si2



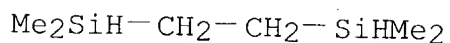
- IT 159222-63-6DP, metalated, reaction products with methanol or silanes  
(metalation and functionalization of poly[bis(dimethylvinylsilyl)methane])
- IT 159222-63-6P, Bis(dimethylvinylsilyl)methane homopolymer  
(metalation and functionalization of poly[bis(dimethylvinylsilyl)methane])
- L12 ANSWER 10 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
1997:682477 Document No. 127:346760 Polycarbosilanes containing siloxy and/or silanamine units by polycondensation using hydrosilylation. Jallouli, Aref; Lestel, Laurence; Tronc, Frederic; Boileau, Sylvie (College France, Paris, F-75231, Fr.). Macromolecular Symposia, 122(International Symposium on Polycondensation, Related Processes and Materials, 1996), 223-228 (English) 1997. CODEN: MSYMEC. ISSN: 1022-1360. Publisher: Huethig & Wepf.
- AB Poly(1,1-dimethyl-1-silylethylene), -(SiMe<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>)-<sub>n</sub>, was prepd. by polycondensation of HSiMe<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-SiHMe<sub>2</sub> (I) with CH<sub>2</sub>:CH-SiMe<sub>2</sub>-CH<sub>2</sub>-CH<sub>2</sub>-SiMe<sub>2</sub>-CH:CH<sub>2</sub> (II) under suitable hydrosilylation conditions. Functional oligomers with either 2 SiH or 2 Si-CH=CH<sub>2</sub> end groups were obtained by using an excess of I or II, resp. These bifunctional oligomers were used as precursors for the prepn. of well-defined networks by reaction with different tetrafunctional crosslinking agents such as D4H, D4Vi, and tetravinylsilane (TVS). They were also used for the prepn. of multiblock copolymers by reaction with dimethylsiloxane oligomers. Alternating copolymers were obtained from monomers contg. siloxy or silanamine units. Thermal properties of these polymeric materials are presented.
- IT 198128-13-1P 198128-14-2P 198128-15-3P  
198128-16-4P 198128-17-5P  
(prepn. of polycarbosilanes contg. siloxy or silazane units)
- RN 198128-13-1 ZCAPLUS
- CN Silane, 1,2-ethanediylbis[ethenyldimethyl-, polymer with 1,2-ethanediylbis(dimethylsilane) (9CI) (CA INDEX NAME)
- CM 1
- CRN 84677-98-5
- CMF C10 H22 Si2



CM 2

CRN 20152-11-8

CMF C6 H18 Si2



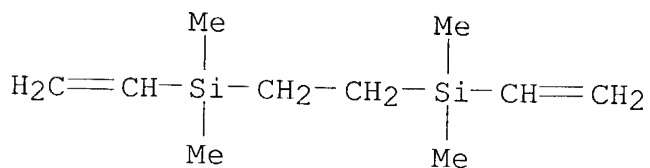
RN 198128-14-2 ZCAPLUS

CN Silane, 1,2-ethanediylbis[ethenyldimethyl-, polymer with  
1,2-ethanediylbis[dimethylsilane] and .alpha.-hydro-.omega.-  
hydroxypoly[oxy(dimethylsilylene)], block (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

CMF C10 H22 Si2

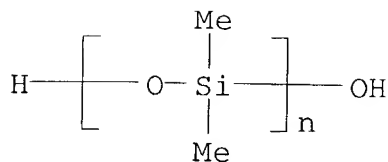


CM 2

CRN 31692-79-2

CMF (C2 H6 O Si)<sub>n</sub> H2 O

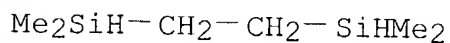
CCI PMS



CM 3

CRN 20152-11-8

CMF C6 H18 Si2



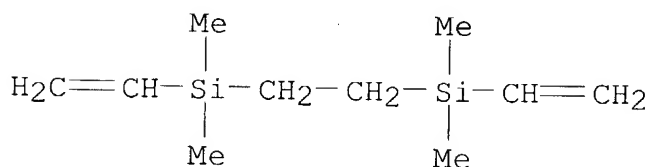
RN 198128-15-3 ZCAPLUS

CN Cyclotetrasiloxane, 2,4,6,8-tetramethyl-, polymer with  
1,2-ethanediylbis[dimethylsilane] and 1,2-  
ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

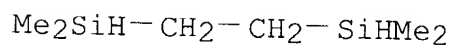
CMF C10 H22 Si2



CM 2

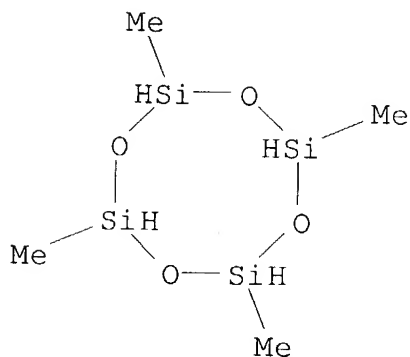
CRN 20152-11-8

CMF C6 H18 Si2



CM 3

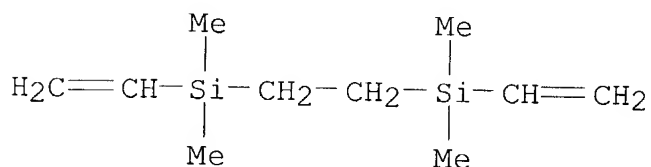
CRN 2370-88-9  
CMF C4 H16 O4 Si4



RN 198128-16-4 ZCAPLUS  
CN Cyclotetrasiloxane, 2,4,6,8-tetraethenyl-2,4,6,8-tetramethyl-,  
polymer with 1,2-ethanediylbis[dimethylsilane] and  
1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

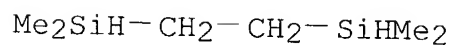
CM 1

CRN 84677-98-5  
CMF C10 H22 Si2



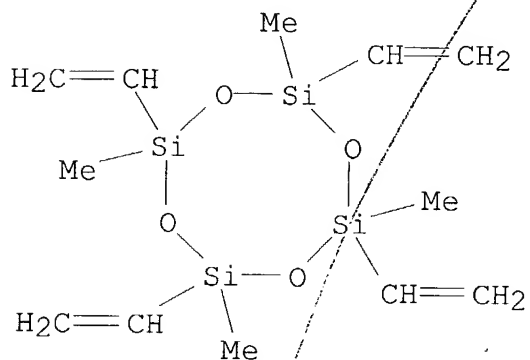
CM 2

CRN 20152-11-8  
CMF C6 H18 Si2



CM 3

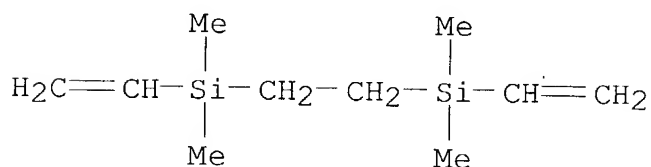
CRN 2554-06-5  
CMF C12 H24 O4 Si4



RN 198128-17-5 ZCAPLUS  
CN Silane, 1,2-ethanediylbis[ethenyldimethyl-, polymer with  
1,2-ethanediylbis[dimethylsilane] and tetraethenylsilane (9CI) (CA  
INDEX NAME)

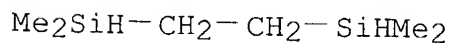
CM 1

CRN 84677-98-5  
CMF C10 H22 Si2



CM 2

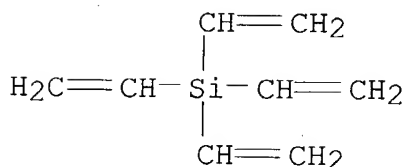
CRN 20152-11-8  
CMF C6 H18 Si2



CM 3

CRN 1112-55-6

CMF C8 H12 Si



IT 198128-13-1P 198128-14-2P 198128-15-3P  
 198128-16-4P 198128-17-5P

(prepn. of polycarbosilanes contg. siloxy or silazane units)

L12 ANSWER 11 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1996:577405 Document No. 125:276743 Ruthenium-catalyzed  
 copolymerization of 2-acetylphenanthrene and .alpha.,.omega.-dienes.  
 Guo, Hongjie; Wang, Guohong; Weber, William P. (K. B. and D. P.  
 Hydrocarbon Res. Inst., Univ. Southern California, Los Angeles, CA,  
 90089, USA). Polymer Bulletin (Berlin), 37(4), 423-428 (English)  
 1996. CODEN: POBUDR. ISSN: 0170-0839. Publisher: Springer.

AB Copolymers with 2-aceto-1,3-phenanthrenylene units in the chain were  
 directly prepd. by Ru catalyzed step polymn. of 2-acetylphenanthrene  
 with .alpha.,.omega.-dienes such as 1,3-  
 divinyltetramethyldisiloxane. Copolymers which incorporate  
 2-aceto-1,3-phenanthrenylene units possess higher Tgs and increased  
 thermal stability compared to analogous copolymers which have  
 2-aceto-5-phenyl-1,3-phenylene(biphenyl) or 2-aceto-1,3-phenylene  
 units. Fluorescence spectra of these copolymers were obtained.

IT 182153-99-7P 182927-84-0P

(prepn. and properties of acetylphenanthrene or acetylbiphenyl  
 polymers with silicon-contg. .alpha.,.omega.-dienes)

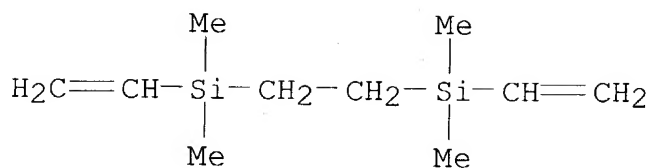
RN 182153-99-7 ZCAPLUS

CN Ethanone, 1-(2-phenanthrenyl)-, polymer with 1,2-  
 ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

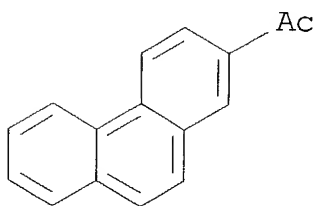
CMF C10 H22 Si2



CM 2

CRN 5960-69-0

CMF C16 H12 O



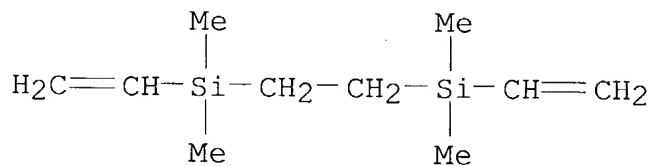
RN 182927-84-0 ZCAPLUS

CN Ethanone, 1-[1,1'-biphenyl]-4-yl-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

CMF C10 H22 Si2

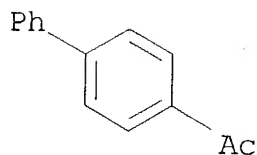


CM 2

CRN 92-91-1

CMF C14 H12 O





IT 182153-99-7P 182927-84-0P

(prepn. and properties of acetylphenanthrene or acetylbiphenyl polymers with silicon-contg. .alpha.,.omega.-dienes)

L12 ANSWER 12 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1996:562286 Document No. 125:248565 Ru catalyzed step-growth copolymerization of 2-acetylphenanthrene and .alpha.,.omega.-dienes. Guo, Hongjie; Weber, William P. (K. B. and D. P. Loker Hydrocarbon Research Institute, University of Southern California, Los Angeles, CA, 90089-1661, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 37(2), 344-345 (English) 1996. CODEN: ACPPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

AB Regular copolymers which incorporate 2-acetyl-1,3-phenanthrenylene units in the polymer backbone were prepd. by Ru catalyzed step-growth copolymn. of 2-acetylphenanthrene and 1,3-divinyldimethyltetramethyldisiloxane.

IT 182153-99-7P

(prepn. by Ru complex-catalyzed step growth polymn.)

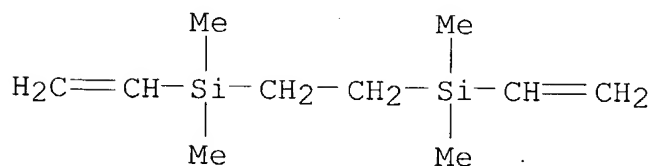
RN 182153-99-7 ZCAPLUS

CN Ethanone, 1-(2-phenanthrenyl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

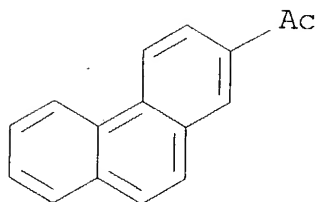
CMF C10 H22 Si2



CM 2

CRN 5960-69-0

CMF C16 H12 O



IT 182153-99-7P

(prepn. by Ru complex-catalyzed step growth polymn.)

L12 ANSWER 13 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1996:544694 Document No. 125:248611 Ruthenium-catalyzed regioselective step-growth copolymerization of 3',4'-methylenedioxyacetophenone and .alpha.,.omega.-dienes. Wang, Guohong; Guo, Hongjie; Weber, William P. (Donald P. and Katherine B. Loker Hydrocarbon Research Institute, Department of Chemistry, University of Southern California, Los Angeles, CA, 90089-1661, USA). Journal of Organometallic Chemistry, 521(1-2), 351-354 (English) 1996. CODEN: JORCAI. ISSN: 0022-328X. Publisher: Elsevier.

AB Ruthenium-catalyzed step-growth copolymn. of 3',4'-methylenedioxyacetophenone and .alpha.,.omega.-dienes such as 1,3-divinyldimethyltetramethyldisiloxane or 3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene give high mol. wt. copoly(3,3,5,5-tetramethyl-4-oxa-3,5-disila-1,7-heptanylene/2-aceto-4,5-methylenedioxy-1,3-phenylene) or copoly(3,3,6,6-tetramethyl-3,6-disila-1,8-octanylene/2-aceto-4,5-methylenedioxy-1,3-phenylene) resp. The synthesis and characterization of these copolymers are reported.

IT 182414-99-9P

(prepn. and characterization of methylenedioxyacetophenone-diene polymers in relation to ruthenium-catalyzed step-growth copolymn.)

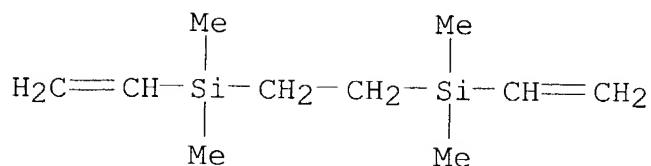
RN 182414-99-9 ZCAPLUS

CN Ethanone, 1-(1,3-benzodioxol-5-yl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

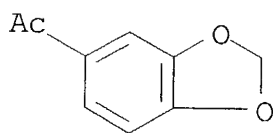
CMF C10 H22 Si2



CM 2

CRN 3162-29-6

CMF C9 H8 O3



IT 182414-99-9P

(prepn. and characterization of methylenedioxyacetophenone-diene polymers in relation to ruthenium-catalyzed step-growth copolymn.)

L12 ANSWER 14 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1996:478958 Document No. 125:196538 Synthesis and characterization of novel crown ether-containing copolymers. Ruthenium-catalyzed copolymerization of 4'-acetylbenzocrown ethers with .alpha.,.omega.-dienes. Wang, Guohong; Guo, Hongjie; Weber, William P. (D. P. and K. B. Loker Hydrocarbon Res. Inst., Univ. Southern California, Los Angeles, CA, 90089, USA). Polymer Bulletin (Berlin), 37(2), 169-173 (English) 1996. CODEN: POBUDR. ISSN: 0170-0839. Publisher: Springer.

AB Ru-catalyzed step growth copolymn. of 4'-acetylbenzo-15-crown-5 and 4'-acetylbenzo-18-crown-6 and .alpha.,.omega.-dienes such as 1,3-divinyltetramethyldisiloxane or 3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene give novel copolymers which incorporate crown ethers into the polymer backbone in a regular manner. The synthesis of these thermally stable copolymers and their characterization is reported. Li cation crown complexes were formed.

IT 180849-16-5DP, lithium complexes 180849-16-5P  
 180849-20-1P

(prepn. and characterization of crown ether-contg. polycarbosilanes and polysiloxanes)

RN 180849-16-5 ZCAPLUS

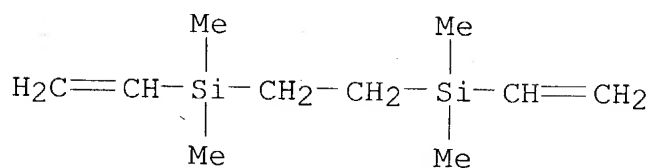
CN Ethanone, 1-(2,3,5,6,8,9,11,12-octahydro-1,4,7,10,13-

benzopentaoxacyclopentadecin-15-yl)-, polymer with  
1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

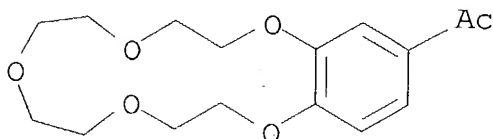
CMF C10 H22 Si2



CM 2

CRN 41757-95-3

CMF C16 H22 O6



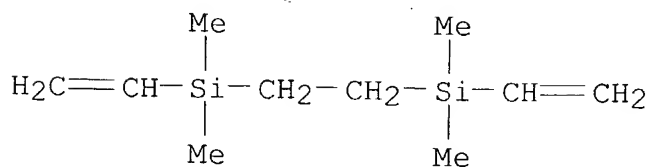
RN 180849-16-5 ZCAPLUS

CN Ethanone, 1-(2,3,5,6,8,9,11,12-octahydro-1,4,7,10,13-benzopentaoxacyclopentadecin-15-yl)-, polymer with  
1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

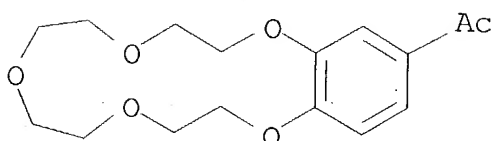
CMF C10 H22 Si2



CM 2

CRN 41757-95-3

CMF C16 H22 O6



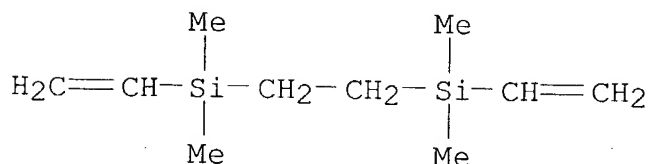
RN 180849-20-1 ZCAPLUS

CN Ethanone, 1-(2,3,5,6,8,9,11,12,14,15-decahydro-1,4,7,10,13,16-benzohexaoxacyclooctadecin-18-yl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

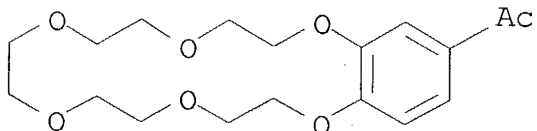
CMF C10 H22 Si2



CM 2

CRN 41855-35-0

CMF C18 H26 O7



IT 180849-16-5DP, lithium complexes 180849-16-5P,  
180849-20-1P  
(prepn. and characterization of crown ether-contg.)

polycarbosilanes and polysiloxanes)

L12 ANSWER 15 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1995:779675 Document No. 123:257514 Ruthenium catalyzed regioselective  
 step-growth copolymerization of 4-methoxyacetophenone or  
 4-phenoxyacetophenone with .alpha.,.omega.-dienes. Guo, Hongjie;  
 Weber, William P. (D. P. and K. B. Loker Hydrocarbon Research  
 Institute, University Southern California, Los Angeles, CA,  
 90089-1661, USA). Polymer Bulletin (Berlin), 35(3), 259-64  
 (English) 1995. CODEN: POBUDR. ISSN: 0170-0839. Publisher:  
 Springer.

AB The Ru-catalyzed step-growth copolymn. of 4-methoxyacetophenone or  
 4-phenoxyacetophenone and .alpha.,.omega.-dienes such as  
 1,3-divinyltetramethyldisiloxane or 3,3,6,6-tetramethyl-3,6-disila-  
 1,7-octadiene give copolymers which have higher mol. wts. than  
 previously described examples. The prepn. and characterization of  
 these copolymers is reported. Higher mol. wt. copolymers were  
 thermally stable to 270.degree..

IT **169475-21-2P**, 4-Methoxyacetophenone-3,3,6,6-tetramethyl-3,6-  
 disila-1,7-octadiene copolymer **169475-24-5P**,  
 4-Phenoxyacetophenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene  
 copolymer  
 (prepn. by ruthenium-catalyzed regioselective step-growth polymn.  
 of substituted acetophenones with .alpha.,.omega.-dienes)

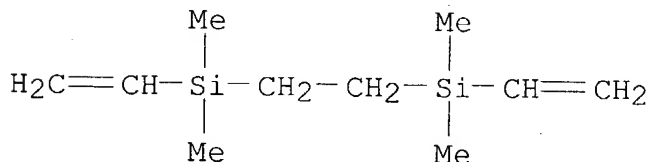
RN 169475-21-2 ZCAPLUS

CN Ethanone, 1-(4-methoxyphenyl)-, polymer with 1,2-  
 ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

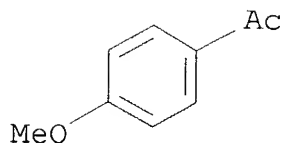
CMF C10 H22 Si2



CM 2

CRN 100-06-1

CMF C9 H10 O2



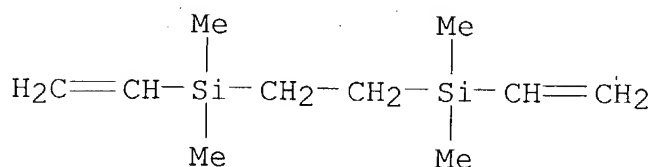
RN 169475-24-5 ZCAPLUS

CN Ethanone, 1-(4-phenoxyphenyl)-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

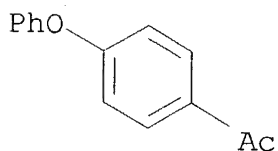
CMF C10 H22 Si2



CM 2

CRN 5031-78-7

CMF C14 H12 O2



IT **169475-21-2P**, 4-Methoxyacetophenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer **169475-24-5P**, 4-Phenoxyacetophenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer  
(prepn. by ruthenium-catalyzed regioselective step-growth polymn. of substituted acetophenones with .alpha.,.omega.-dienes)

L12 ANSWER 16 OF 23 ZCAPLUS. COPYRIGHT 2004 ACS on STN  
1995:691015 Document No. 123:257554 Ruthenium catalyzed  
copolymerization of anthrone, fluorenone, or xanthone with

.alpha.,.omega.-dienes. Tapsak, Mark A.; Guo, Hongjie; Weber, William P. (K.B. and D. B. Loker Hydrocarbon Research Institute, University Southern California, Los Angeles, CA, 90089-1661, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 36(1), 451-2 (English) 1995. CODEN: ACPPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

AB Anthrone, fluorenone, or xanthone were polymd. with Si-contg. .alpha.,.omega.-dienes in the presence of Ru catalysts. Thus, anthrone was polymd. with 3,3,6,6-tetramethyl-3,6-disila-1,8-octanylene to give a copolymer in 70% yield.

IT 162664-49-5P, Anthrone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer

(ruthenium-catalyzed copolymn. of anthrone, fluorenone, or xanthone with silicon-contg. .alpha.,.omega.-dienes)

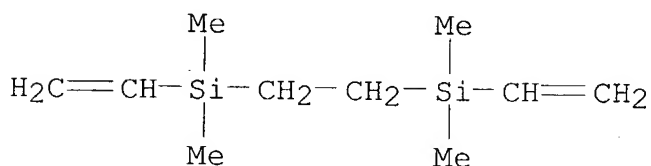
RN 162664-49-5 ZCAPLUS

CN 9(10H)-Anthracenone, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

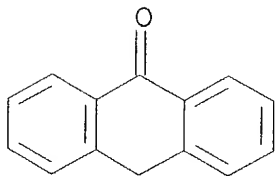
CMF C10 H22 Si2



CM 2

CRN 90-44-8

CMF C14 H10 O



IT 162664-49-5P, Anthrone-3,3,6,6-tetramethyl-3,6-disila-1,7-



octadiene copolymer

(ruthenium-catalyzed copolymn. of anthrone, fluorenone, or xanthone with silicon-contg. .alpha.,.omega.-dienes)

L12 ANSWER 17 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1995:683364 Document No. 123:84068 Synthesis of High Molecular Weight Copolymers by Ruthenium-Catalyzed Step-Growth Copolymerization of Acetophenone with .alpha.,.omega.-Dienes. Guo, Hongjie; Wang, Guohong; Tapsak, Mark A.; Weber, William P. (Katherine B. and Donald P. Loker Hydrocarbon Research Institute, University of Southern California, Los Angeles, CA, 90089-1661, USA). Macromolecules, 28(16), 5686-7 (English) 1995. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB High mol. wt. acetophenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymers are prepd. by copolymn. in the presence of styrene-activated dihydridocarbonyltris(triphenylphosphine)ruthenium catalyst.

IT 165675-33-2P

(prepn. by step-growth polymn. using styrene-activated dihydridocarbonyltris(triphenylphosphine)ruthenium catalyst)

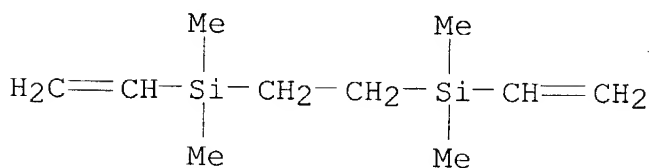
RN 165675-33-2 ZCAPLUS

CN Ethanone, 1-phenyl-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

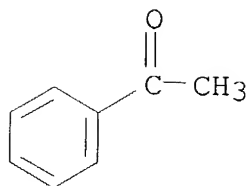
CMF C10 H22 Si2



CM 2

CRN 98-86-2

CMF C8 H8 O



IT 165675-33-2P

(prep. by step-growth polymn. using styrene-activated dihydridocarbonyltris(triphenylphosphine)ruthenium catalyst)

L12 ANSWER 18 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1995:592103 Document No. 123:10012 Ruthenium-Catalyzed Regioselective Step-Growth Copolymerization of p-(Dialkylamino)acetophenones and .alpha.,.omega.-Dienes. Guo, Hongjie; Tapsak, Mark A.; Weber, William P. (Donald P. and Katherine B. Loker Hydrocarbon Research Institute, University of Southern California, Los Angeles, CA, 90089-1661, USA). Macromolecules, 28(13), 4714-18 (English) 1995. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Ruthenium-catalyzed step-growth copolymn. of p-(dialkylamino)acetophenones and .alpha.,.omega.-dienes such as 1,3-divinyldimethyltetramethyldisiloxane gives copolymers which have significantly high mol. wts. The copolymn. is sensitive to electronic effects in the acetophenones, esp. electron-donating p-dialkylamino groups that facilitate the copolymn. and result in high mol. wt.

IT 163733-59-3P 163733-60-6P 163733-61-7P

(ruthenium carbonyl catalyzed step-growth copolymn. of acetophenones with .alpha.,.omega.-dienes)

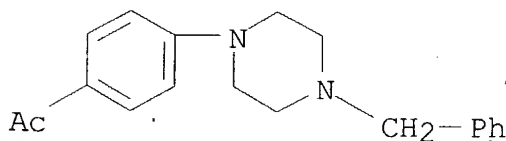
RN 163733-59-3 ZCAPLUS

CN Ethanone, 1-[4-[4-(phenylmethyl)-1-piperazinyl]phenyl]-, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 163733-55-9

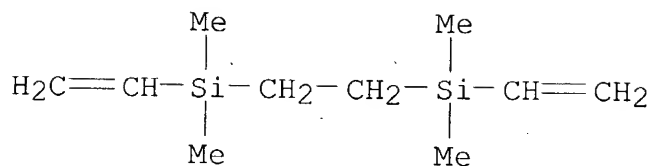
CMF C19 H22 N2 O



CM 2

CRN 84677-98-5

CMF C10 H22 Si2



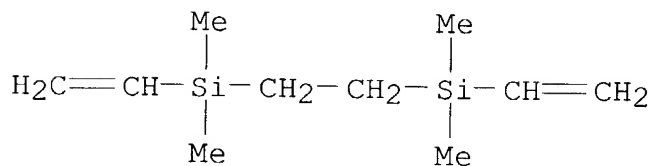
RN 163733-60-6 ZCAPLUS

CN Ethanone, 1-[4-(1-piperidiny)phenyl]-, polymer with  
1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

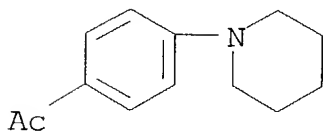
CMF C10 H22 Si2



CM 2

CRN 10342-85-5

CMF C13 H17 N O



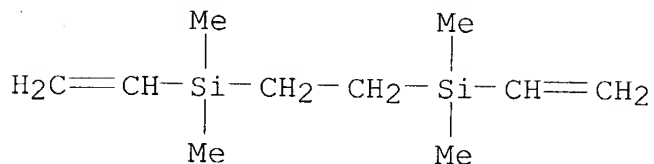
RN 163733-61-7 ZCAPLUS

CN Ethanone, 1-[4-(4-morpholinyl)phenyl]-, polymer with  
1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

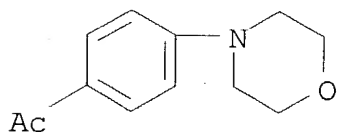
CMF C10 H22 Si2



CM 2

CRN 39910-98-0

CMF C12 H15 N O2



IT 163733-59-3P 163733-60-6P 163733-61-7P

(ruthenium carbonyl catalyzed step-growth copolymn. of acetophenones with .alpha.,.omega.-dienes)

L12 ANSWER 19 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1995:471630 Document No. 122:266129 Ruthenium catalyzed regioselective copolymerization of anthrone, fluorenone, or xanthone with .alpha.,.omega.-dienes. Guo, Hongjie; Tapsak, Mark A.; Weber, William P. (K. B. and D. B. Loker Hydrocarbon Res. Inst., Univ. Southern California, Los Angeles, CA, 90089-1661, USA). Polymer Bulletin (Berlin), 34(1), 49-55 (English) 1995. CODEN: POBUDR. ISSN: 0170-0839. Publisher: Springer.

AB Ruthenium catalyzed regioselective copolymns. of anthrone, fluorenone or xanthone with 1,3-divinyldisiloxane or 3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene are reported. The reaction occurs by anti-Markovnikov insertion of the C:C bonds into the arom. C-H bonds ortho to the carbonyl group.

IT 162664-49-5P, Anthrone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer 162664-52-0P, 3,3,6,6-Tetramethyl-3,6-disila-1,7-octadiene-xanthone copolymer 162664-53-1P, Fluorenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer (prepn., characterization and thermal properties of)

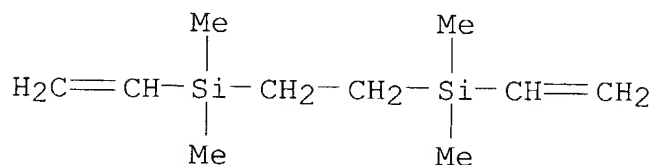
RN 162664-49-5 ZCAPLUS

CN 9(10H)-Anthracenone, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

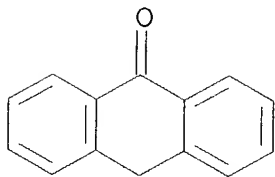
CMF C10 H22 Si2



CM 2

CRN 90-44-8

CMF C14 H10 O



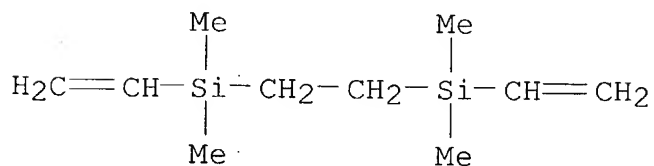
RN 162664-52-0 ZCAPLUS

CN 9H-Xanthen-9-one, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

CM 1

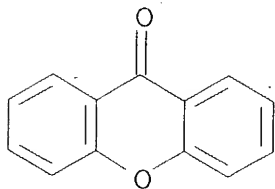
CRN 84677-98-5

CMF C10 H22 Si2



CM 2

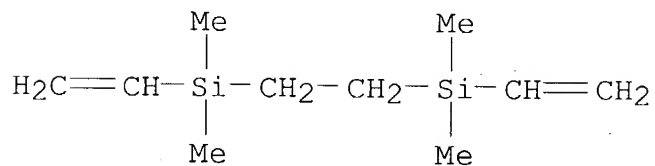
CRN 90-47-1  
CMF C13 H8 O2



RN 162664-53-1 ZCAPLUS  
CN 9H-Fluoren-9-one, polymer with 1,2-ethanediylbis[ethenyldimethylsilane] (9CI) (CA INDEX NAME)

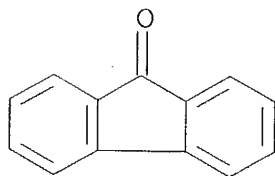
CM 1

CRN 84677-98-5  
CMF C10 H22 Si2



CM 2

CRN 486-25-9  
CMF C13 H8 O



IT 162664-49-5P, Anthrone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer 162664-52-0P, 3,3,6,6-Tetramethyl-3,6-disila-1,7-octadiene-xanthone copolymer 162664-53-1P, Fluorenone-3,3,6,6-tetramethyl-3,6-disila-1,7-octadiene copolymer (prepn., characterization and thermal properties of)

L12 ANSWER 20 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1995:212969 Document No. 122:161593 Anionic Cyclopolymerization of Bis(dimethylvinylsilyl)methane. Suga, Yasuhiro; Oku, Junichi; Takaki, Mikio (Department of Applied Chemistry, Nagoya Institute of Technology, Nagoya, 466, Japan). Macromolecules, 27(26), 7930-1 (English) 1994. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Anionic cyclopolymerization of bis(dimethylvinylsilyl)methane (BVSM) is reported. The polymerization of BVSM with n-butyllithium/N,N,N',N'-tetramethylethylenediamine (TMEDA) in hexane affords a soluble polymer, whose number-average molecular weight is in accord with the calculated value for the polymer without crosslinking structure, whereas the polymerization of VSM in the absence of TMEDA gives only an oligomer in low yield. Six-membered ring structure in the polymer is certified with  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra.

IT 159222-63-6P

(anionic cyclopolymerization of bis(dimethylvinylsilyl)methane in presence of butyllithium-tetramethylethylenediamine catalyst)

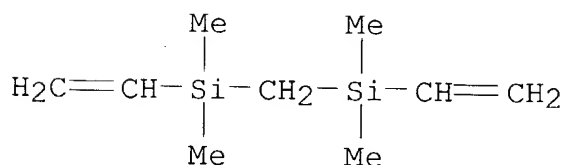
RN 159222-63-6 ZCAPLUS

CN Silane, methylenebis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 17865-60-0

CMF C9 H20 Si2



IT 159222-63-6P

(anionic cyclopolymerization of bis(dimethylvinylsilyl)methane in presence of butyllithium-tetramethylethylenediamine catalyst)

L12 ANSWER 21 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1991:608774 Document No. 115:208774 Acyclic diene metathesis (ADMET) polymerization. Synthesis of unsaturated

polycarbo(dimethyl)silanes. Wagener, K. B.; Smith, D. W., Jr. (Cent. Macromol. Sci. Eng., Univ. Florida, Gainesville, FL, 32611-2046, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 32(1), 373-4 (English) 1991. CODEN: ACPPAY. ISSN: 0032-3934.

AB A discussion of the title homopolymn. of  $\text{Me}_2\text{Si}(\text{CH}:\text{CH}_2)_2$  (I),  $\text{CH}_2:\text{CHCH}_2\text{SiMe}_2\text{CH}_2\text{CH}_2\text{SiMe}_2\text{CH}_2\text{CH}:\text{CH}_2$ , and p- $(\text{CH}_2:\text{CHCH}_2\text{SiMe}_2)\text{C}_6\text{H}_4$  and copolymn. of I and  $\text{CH}_2:\text{CH}(\text{CH}_2)_6\text{CH}:\text{CH}_2$ .

IT 137020-99-6P

(prepn. of, by acyclic diene metathesis polymn.)

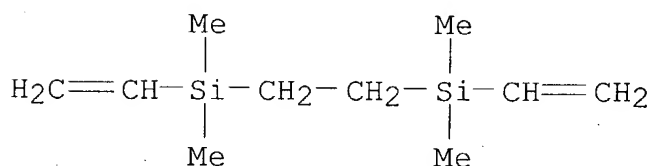
RN 137020-99-6 ZCAPLUS

CN Silane, 1,2-ethanediylbis[ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 84677-98-5

CMF C10 H22 Si2



IT 137020-99-6P

(prepn. of, by acyclic diene metathesis polymn.)

L12 ANSWER 22 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1989:544138 Document No. 111:144138 Silyl group-containing ethylene polymers, resist compositions, and patterning processes. Saigo, Kazuhide (NEC Corp., Japan). Jpn. Kokai Tokkyo Koho JP 01101312 A2 19890419 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-258443 19871015.

AB Polymers (mol. wt. 3000-1,000,000) contg. repeating units of the formula  $\text{CH}_2\text{CH}[\text{SiMe}_2(\text{CH}_2)_n\text{SiMe}_2\text{CH}_2\text{CH}:\text{CH}_2]$  ( $n \geq 1$ ), resist compns. contg. these polymers and bisazide compds., and 2-layer resist patterning processes which use these resist compns. as the top resist layer are claimed. The polymers give patterns having excellent dry etching resistance and are useful in the fabrication of semiconductors, magnetic bubble memories, etc. Thus, 1,4-dichlorotetramethyldisilylethane was methoxylated, then treated with  $\text{CH}_2:\text{CHCH}_2\text{MgBr}$  followed by  $\text{CH}_2:\text{CHMgBr}$  to give 1-allyl-4-vinyldisilylethane, which was polymd. in the presence of n-BuLi to give a polymer with a wt. av. mol. wt. of 55,000. A soln. of the polymer and 2,6-di(4-azidobenzal)-4-

↳ Photocrosslinking agent.



methylcyclohexanone in xylene was spin-coated on a MP 1300 (resist)-coated Si substrate, irradiated by UV through a mask, developed, and etched to form a submicron pattern.

IT 122721-60-2P

(prepn. of, as photoresist, for dry etching-resistant pattern formation)

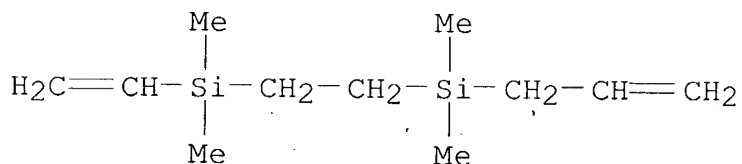
RN 122721-60-2 ZCAPLUS

CN Silane, [2-(dimethyl-2-propenylsilyl)ethyl]ethenyldimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 122721-59-9

CMF C11 H24 Si2



IT 122721-60-2P

(prepn. of, as photoresist, for dry etching-resistant pattern formation)

L12 ANSWER 23 OF 23 ZCAPLUS COPYRIGHT 2004 ACS on STN

1987:58937 Document No. 106:58937 Materials and method for fine pattern formation. Tanaka, Haruyori; Morita, Masao (Nippon Telegraph and Telephone Public Corp., Japan). Jpn. Kokai Tokkyo Koho JP 61105542 A2 19860523 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-225988 19841029.

AB The title materials, which are used for the upper layers of double-layer photoresists for fine pattern formation and provide resists having high resistance to O plasma etching, contain a polymer of the formula  $\text{RC.tplbond.CR1}$  (R, R1 = H, alkyl, alkenyl, aryl, silyl, substituted silyl) and a radical polymn. initiator and the title method involves formation of a polymer layer resistant to dry etching on a substrate, formation of a pattern-forming photoresist layer, prebaking for crosslinking, patterning by exposure to far UV, and etching of the lower layer by O plasma using the pattern as a protective mask after formation of the pattern by development of the upper layer. Thus, a polymer was obtained by polymn. of 112 g 1-trimethylsilyl-1-propyne in 1 L PhMe using 8 g TaCl5 as the catalyst. A Si wafer was coated with a 2-.mu. layer of AZ1350 and then with a 0.2-.mu. layer contg. the above polymer 1 and Bz2O2 0.1 part. Exposure through a pattern mask to UV and

development with a 2:1 xylene-iso-PrOH mixt. gave a pattern. The pattern reproduced 1-.mu. lines and widths. A pattern of the lower layer having 1-.mu. resolu. and 2.1-.mu. thickness was formed by O plasma etching. Fine patterns with clear-cut sections were obtained on substrates having steps.

IT 106447-33-0 106447-35-2

(double-layer photoresist with upper layer contg. radical polymn. initiator and, for fine pattern formation)

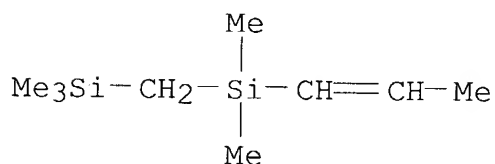
RN 106447-33-0 ZCAPLUS

CN Silane, [(dimethyl-1-propenylsilyl)methyl]trimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106447-32-9

CMF C9 H22 Si2



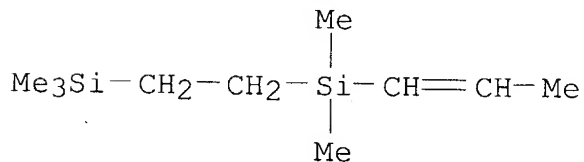
RN 106447-35-2 ZCAPLUS

CN Silane, [2-(dimethyl-1-propenylsilyl)ethyl]trimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106447-34-1

CMF C10 H24 Si2



IT 106447-33-0 106447-35-2

(double-layer photoresist with upper layer contg. radical polymn. initiator and, for fine pattern formation)

Access DB# 138928**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 11-29-04  
 Art Unit: 1752 Phone Number 302-1333 Serial Number: 101085, 935  
 Mail Box and Bldg/Room Location: 9D67 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Please See Bib. Sheet.

Inventors (please provide full names): \_\_\_\_\_

SCIENTIFIC REFERENCE BR  
Sci. & Tech. Info. Cntr

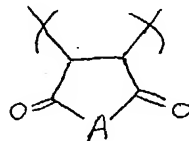
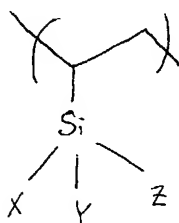
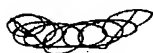
Earliest Priority Filing Date: \_\_\_\_\_

NOV 30

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Pat. & T.M. Office

Please search for the polymer having  
both of the following repeat units:



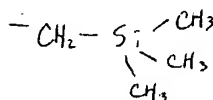
( A = ~~oxygen~~  
 oxygen  
 atom  
 or  
 Nitrogen  
 atom )

This search  
 covers

Polymer A, B, F. & I.

(of claim #17)

X, Y, Z. each independently  
 represent ~~represent~~ -CH<sub>3</sub>, or

**STAFF USE ONLY****Type of Search****Vendors and cost where applicable**

Searcher: Ed

NA Sequence (#) \_\_\_\_\_

STN \_\_\_\_\_

Searcher Phone #: \_\_\_\_\_

AA Sequence (#) \_\_\_\_\_

Dialog \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Structure (#) \_\_\_\_\_

Questel/Orbit \_\_\_\_\_

Date Searcher Picked Up: \_\_\_\_\_

Bibliographic \_\_\_\_\_

Dr.Link \_\_\_\_\_

Date Completed: 12-2-04

Litigation \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Searcher Prep & Review Time: \_\_\_\_\_

Fulltext \_\_\_\_\_

Sequence Systems \_\_\_\_\_

Clerical Prep Time: \_\_\_\_\_

Patent Family \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Online Time: \_\_\_\_\_

Other \_\_\_\_\_

Other (specify) \_\_\_\_\_



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Bib Data Sheet

CONFIRMATION NO. 4343

<b>SERIAL NUMBER</b> 10/085,935	<b>FILING DATE</b> 03/01/2002 <b>RULE</b>	<b>CLASS</b> 430	<b>GROUP ART UNIT</b> 1752	<b>ATTORNEY DOCKET NO.</b> KOJIM-448
<b>APPLICANTS</b> Takanobu Takeda, Nakakubiki-gun, JAPAN; Jun Hatakeyama, Nakakubiki-gun, JAPAN; Toshinobu Ishihara, Nakakubiki-gun, JAPAN; Tohru Kubota, Nakakubiki-gun, JAPAN; Yasufui Kubota, Nakakubiki-gun, JAPAN;				
<b>** CONTINUING DATA *****</b> None S.T.L.				
<b>** FOREIGN APPLICATIONS *****</b> JAPAN 2001-056543 03/01/2001 S.T.L.				
<b>IF REQUIRED, FOREIGN FILING LICENSE GRANTED</b> ** 03/22/2002				
Foreign Priority claimed <input checked="" type="checkbox"/> yes <input type="checkbox"/> no 35 USC 119 (a-d) conditions <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after met <input type="checkbox"/> Allowance <input type="checkbox"/> S.T.L. Verified and Acknowledged <input type="checkbox"/> Examiner's Signature <input type="checkbox"/> Initials		<b>STATE OR COUNTRY</b> JAPAN	<b>SHEETS DRAWING</b> 2	<b>TOTAL CLAIMS</b> 12
			<b>INDEPENDENT CLAIMS</b> 1	
<b>ADDRESS</b> 23599				
<b>TITLE</b> Silicon-containing polymer, resist composition and patterning process				
<b>FILING FEE RECEIVED</b> 1092	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees ( Filing ) <input type="checkbox"/> 1.17 Fees ( Processing Ext. of time ) <input type="checkbox"/> 1.18 Fees ( Issue ) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit	

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FILE 'LREGISTRY' ENTERED AT 19:43:08 ON 02 DEC 2004

L1 STR  
 L2 STR L1  
 L3 STR  
 L4 STR

FILE 'REGISTRY' ENTERED AT 19:57:46 ON 02 DEC 2004

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 L6 37 S L1 AND L5  
 L7 1346 S L1 AND L5 FUL  
 SAV L7 LEE935A/A  
 L8 2 S L2 SSS SAM SUB=L7  
 L9 40 S L2 SSS FUL SUB=L7  
 SAV L9 LEE935B/A  
 L10 1 S L3 AND L4 SSS SAM SUB=L7  
 L11 21 S L3 AND L4 SSS FUL SUB=L7  
 SAV L11 LEE935C/A

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L12 23 S L9  
 L13 16 S L11

FILE 'REGISTRY' ENTERED AT 20:09:51 ON 02 DEC 2004

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L1 STR

21		25			
C=C		X			
{ 2 24		{			
G1^Si^G1	Ak @6	@9 Ak~X	Cb @12	Ak^Si	O~Si
1 { 3		{ 27		@15 @16	@19 20
G1		X			
23		26			

VAR G1=6/9/12/15/16/19

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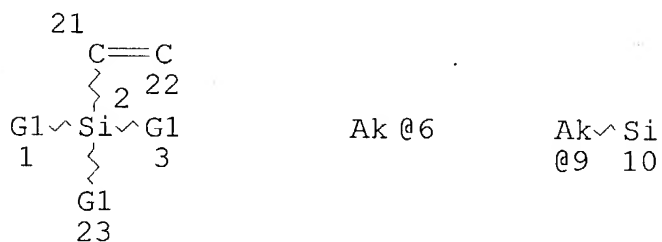
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 CONNECT IS E2 RC AT 15  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS SAT AT 6  
 GGCAT IS UNS AT 12  
 GGCAT IS SAT AT 15  
 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

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 NUMBER OF NODES IS 16

## STEREO ATTRIBUTES: NONE

L3 STR



VAR G1=6/9

## NODE ATTRIBUTES:

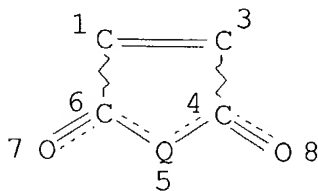
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 GGCAT IS SAT AT 6  
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 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 9

## STEREO ATTRIBUTES: NONE

L4 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE  
L5 SCR 2043  
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L11 21 SEA FILE=REGISTRY SUB=L7 SSS FUL L3 AND L4

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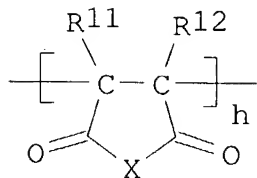
21 ANSWERS

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USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
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=> d l13 1-16 cbib abs hitstr hitrn

L13 ANSWER 1 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2004:876600 Document No. 141:372757 Silicon-containing polymer  
compound, resist material, and patterning method. Hatakeyama, Jun;  
Takeda, Takanobu; Ishihara, Toshinobu (Shin-Etsu Chemical Industry  
Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004292781 A2  
20041021, 52 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
2003-150236 20030528. PRIORITY: JP 2002-192866 20020702; JP  
2003-27804 20030205.

GI



I

AB Disclosed is the silicon-contg. polymer compd. having repeating units represented by  $[R_1C(SiR_4R_5R_6)-CR_2R_3]_a$ , I, and  $[H_2C-C(CH_2COOR_8)(COOR_7)]_c$  ( $R_1-3 = H, C_1-10$  alkyl;  $R_4-6 = C_1-20$  alkyl, haloalkyl, etc.;  $R_7,8 = H, C_1-10$  alkyl, acid-unstable group; and  $a, b, c = \text{integer}$ ). Also disclosed is the process involving plasma etching using a halogen gas such as  $Br_2$  and  $Cl_2$  after the formation of a pattern.

IT 779336-32-2P 779336-34-4P

(silicon-contg. polymer compd. for resist material)

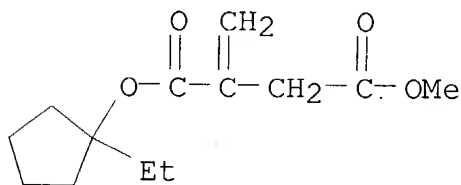
RN 779336-32-2 ZCAPLUS

CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester, polymer with [(ethenyldimethylsilyl)methyl]trimethylsilane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 648895-32-3

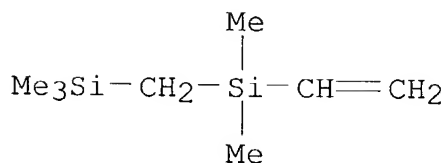
CMF C13 H20 O4



CM 2

CRN 18291-20-8

CMF C8 H20 Si2

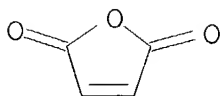


CM 3

CRN 108-31-6

CMF C4 H2 O3





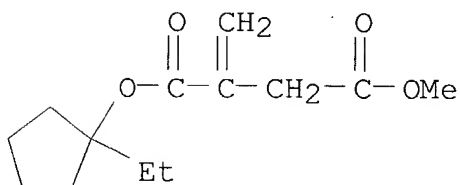
RN 779336-34-4 ZCAPLUS

CN Butanedioic acid, methylene-, 1-(1-ethylcyclopentyl) 4-methyl ester,  
polymer with ethenylmethylbis[(trimethylsilyl)methyl]silane and  
2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 648895-32-3

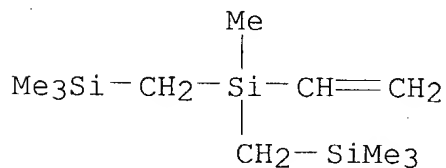
CMF C13 H20 O4



CM 2

CRN 16709-90-3

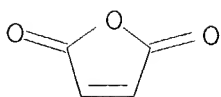
CMF C11 H28 Si3



CM 3

CRN 108-31-6

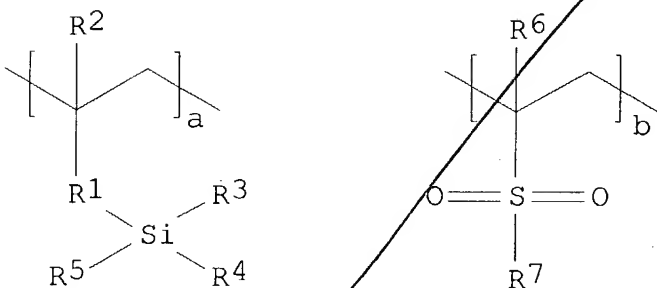
CMF C4 H2 O3



IT 779336-32-2P 779336-34-4P  
(silicon-contg. polymer compd. for resist material)

L13 ANSWER 2 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2004:59649 Document No. 140:136424 Silicon-containing polymer,  
photoresist composition and patterning process. Hatakeyama, Jun;  
Takeda, Takanobu; Ishihara, Toshinobu (Japan). U.S. Pat. Appl.  
Publ. US 2004013980 A1 20040122, 36 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2003-611261 20030702. PRIORITY: JP 2002-192910  
20020702.

GI



I

AB The present invention relates to silicon-contg. polymers comprising recurring units of I (R1 = single bond, alkylene; R2 = hydrogen, alkyl; R3-5 = alkyl, haloalkyl, aryl or silicon-contg. group; R6 = hydrogen, Me, cyano or -C(=O)OR8; R8 = hydrogen, alkyl, acid labile group; R7 = alkyl, -NR9R10, -OR11; R9-11 = hydrogen or alkyl; a, b = pos. nos. satisfying 0 < a+b ≤ 1). Resist compns. comprising the polymers are sensitive to high-energy radiation and have a high sensitivity and resolu. at a wavelength of less than 300 nm and improved resistance to oxygen plasma etching.

IT 648895-18-5P  
(silicon-contg. polymer, resist compn. for patterning process)

RN 648895-18-5 ZCAPLUS

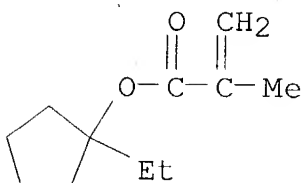
CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with

ethenyltrimethylsilane, 2,5-furandione and (methylsulfonyl)ethene  
(9CI) (CA INDEX NAME)

CM 1

CRN 266308-58-1

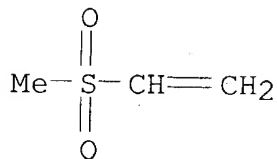
CMF C11 H18 O2



CM 2

CRN 3680-02-2

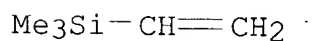
CMF C3 H6 O2 S



CM 3

CRN 754-05-2

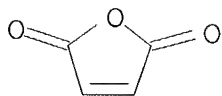
CMF C5 H12 Si



CM 4

CRN 108-31-6

CMF C4 H2 O3

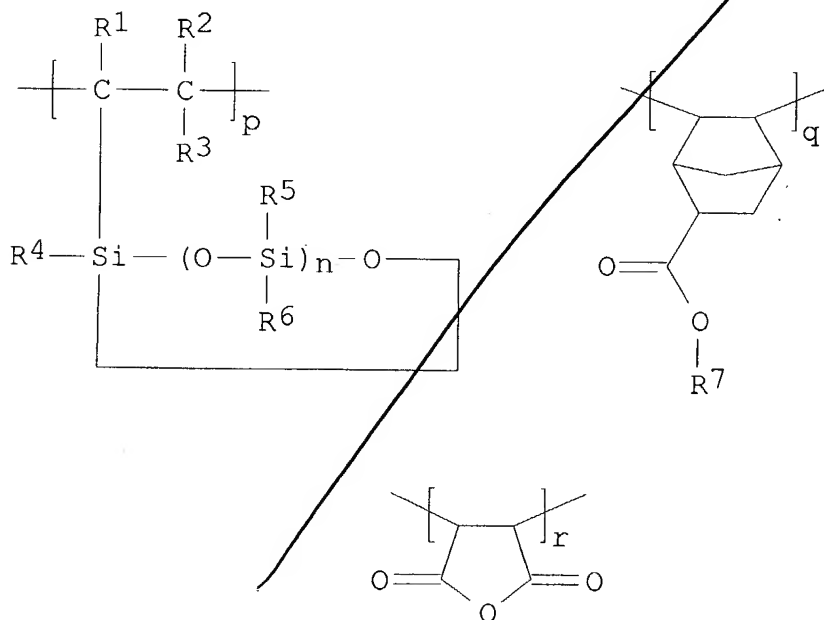


IT 648895-18-5P

(silicon-contg. polymer, resist compn. for patterning process)

L13 ANSWER 3 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 2004:20370 Document No. 140:84642 Silicon-containing polymer, resist composition and patterning process. Takeda, Takahobu; Hatakeyama, Jun; Ishihara, Toshinobu (Japan). U.S. Pat. Appl. Publ. US 2004006191 A1 20040108, 20 pp. (English). CODEN: USXXCO.  
 APPLICATION: US 2003-611014 20030702. PRIORITY: JP 2002-192947 20020702.

GI



I

AB The invention relates to silicon-contg. polymers comprising recurring units of three components represented by the general formula I (R1-3 = H, 1-10 alkyl; C4-6 = H, C 1-20 alkyl or haloalkyl, etc.; R7 = C 4-20 alkyl; n = 1-5; p, q, r = pos. no.) are novel. Resist compns. comprising the polymers are sensitive to

high-energy radiation and have a high sensitivity and resolu. at a wavelength of less than 300 nm and improved resistance to oxygen plasma etching. 1.

IT 640728-41-2P

(silicon-contg. polymer, resist compn. and patterning process)

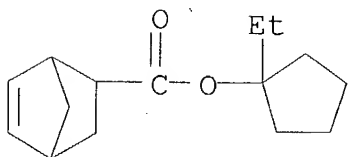
RN 640728-41-2 ZCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1-ethylcyclopentyl ester, polymer with [2-(ethenyldimethylsilyl)ethyl]trimethylsilane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 279243-69-5

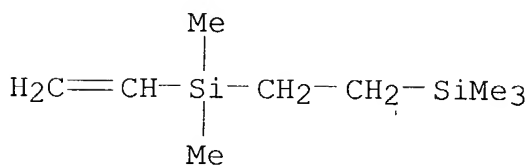
CMF C15 H22 O2



CM 2

CRN 23755-58-0

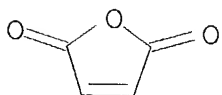
CMF C9 H22 Si2



CM 3

CRN 108-31-6

CMF C4 H2 O3



IT 640728-41-2P  
(silicon-contg. polymer, resist compn. and patterning process)

L13 ANSWER 4 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2003:570077 Document No. 140:261278 Newly developed  
alternating-copolymer-based silicon containing resists for  
sub-100-nm pattern fabrication. Hatakeyama, Jun; Takeda, Takanobu;  
Kinsho, Takeshi; Kawai, Yoshio; Ishihara, Toshinobu (New Functional  
Materials Research Center, Shin-Etsu Chemical Co., Ltd., Niigata,  
942-8601, Japan). Proceedings of SPIE-The International Society for  
Optical Engineering, 5039(Pt. 2, Advances in Resist Technology and  
Processing XX), 672-681 (English) 2003 CODEN: PSISDG. ISSN:  
0277-786X. Publisher: SPIE-The International Society for Optical  
Engineering.

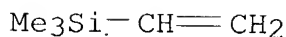
AB Silicon contg. bi-layer resist systems for 193 nm lithog. have been  
developed for sub-100 nm pattern fabrication. Lithog.  
characteristics of thin film top layer resist show the advantages of  
high resoln. and wide process window. Thick under-layer covers  
substrate topog. with min. reflectivity and provides sufficient etch  
resistance for substrate etching. Alternating-copolymers have been  
employed as backbones of silicon contg. resists polymers. Several  
kinds of functional silicon contg. olefins have been synthesized and  
polymd. to form alternating copolymers. Structural properties of  
alternating copolymer and hydrophobicity of the silicon contg.  
groups effectively reduced micro swelling in developer and minimized  
line edge roughness. Discrimination enhancement and acid diffusion  
control were investigated to achieve high resoln. and small  
proximity pattern size bias. As a result, rectangular 100 nm dense  
line patterns with small line edge roughness are delineated by the  
newly developed silicone contg. resist, using 193 nm scanner of NA  
value of 0.68 and COG-Mask. Characteristics of oxygen reactive ion  
etching resistance onto the new alternating polymers will be also  
discussed.

IT 670250-19-8  
(alternating copolymers of silicon-contg. olefin and maleic  
anhydride for top imaging layers of bilayer resist systems for  
193 nm lithog.)

RN 670250-19-8 ZCAPLUS  
CN 2,5-Furandione, polymer with ethenyltrimethylsilane, alternating  
(9CI) (CA INDEX NAME)

CM 1

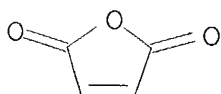
CRN 754-05-2  
CMF C5 H12 Si



CM 2

CRN 108-31-6

CMF C4 H2 O3

20020168581  
applicant's

IT. 670250-19-8

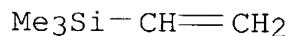
(alternating copolymers of silicon-contg. olefin and maleic anhydride for top imaging layers of bilayer resist systems for 193 nm lithog.)

L13 ANSWER 5 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2002:671932 Document No. 137:202031 Preparation and patterning process of silicon-containing chemical amplification positive resist compositions. Takeda, Takanobu; Hatakeyama, Jun; Ishihara, Toshinobu; Kubota, Tohru; Kubota, Yasufumi (Shin-Etsu Chemical Co., Ltd., Japan). Eur. Pat. Appl. EP 1236745 A2 20020904, 33 pp.  
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR.  
(English). CODEN: EPXXDW. APPLICATION: EP 2002-251419 20020228.  
PRIORITY: JP 2001-56543 20010301.

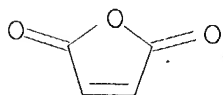
AB Novel silicon-contg. polymers, which are obtained by copolymerizing vinylsilane with a compound having a low electron density unsaturated bond such as maleic anhydride, maleimide derivatives or tetrafluoroethylene, are suitable as the base resin in chemically amplified positive resist compositions used for micropatterning in a process for the fabrication of semiconductor devices. The resist compositions, which are sensitive to high-energy radiation, such as deep-UV light, laser beams, electron beams or X-rays, can form high aspect ratio patterns with high sensitivity and resolution as well as improved resistance to oxygen or halogen gas plasma etching. Thus, maleic anhydride and trimethylvinylsilane were polymerized in THF using radical polymerization technique; the silicone polymer, photoacid generator, dissolution inhibitor were thoroughly dissolved in propylene glycol monomethyl ether acetate; the resist solution was spin coated onto cured DUV-30/novolac resist substrate and then baked at 100.degree. for 90 s to form a resist film of 0.2 .mu.m, followed by exposing to laser beam, baking at 100.degree. for 90 s, and developing in TMAH to obtain a positive pattern; the resist pattern was then evaluated in

sensitivity, resoln., and etc.

IT 26702-38-5P, Maleic anhydride-trimethylvinylsilane copolymer  
452912-28-6P, N-Methylmaleimide-trimethylvinylsilane  
copolymer 452912-32-2P, Maleic anhydride-  
bis(trimethylsilylmethyl)vinylmethyilsilane) copolymer  
452912-34-4P, Maleic anhydride-bis(trimethylsilylmethyl)vinyl  
methyilsilane-1-ethylcyclopentyl methacrylate copolymer  
452912-65-1P, Maleic anhydride-trimethylvinylsilane-1-  
ethylcyclopentyl methacrylate copolymer  
(crued and uncured; silicon-contg. chem. amplification pos.  
resist compns. and patterning process thereof)  
RN 26702-38-5 ZCAPLUS  
CN 2,5-Furandione, polymer with ethenyltrimethylsilane (9CI) (CA INDEX  
NAME)  
CM 1  
CRN 754-05-2  
CMF C5 H12 Si

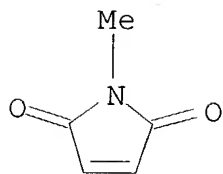


CM 2  
CRN 108-31-6  
CMF C4 H2 O3



RN 452912-28-6 ZCAPLUS  
CN 1H-Pyrrole-2,5-dione, 1-methyl-, polymer with ethenyltrimethylsilane  
(9CI) (CA INDEX NAME)  
CM 1  
CRN 930-88-1  
CMF C5 H5 N O2

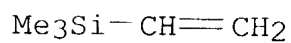




CM 2

CRN 754-05-2

CMF C5 H12 Si



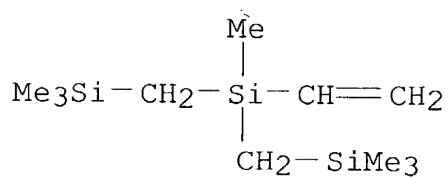
RN 452912-32-2 ZCAPLUS

CN 2,5-Furandione, polymer with 4-ethenyl-2,2,4,6,6-pentamethyl-2,4,6-trisilaheptane (9CI) (CA INDEX NAME)

CM 1

CRN 16709-90-3

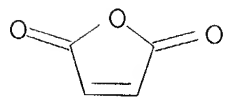
CMF C11 H28 Si3



CM 2

CRN 108-31-6

CMF C4 H2 O3



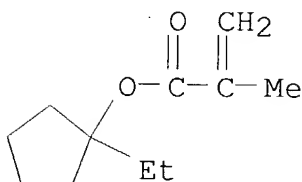
RN 452912-34-4 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with ethenylmethylbis[(trimethylsilyl)methyl]silane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 266308-58-1

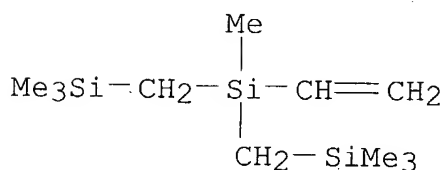
CMF C11 H18 O2



CM 2

CRN 16709-90-3

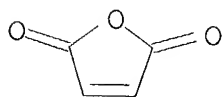
CMF C11 H28 Si3



CM 3

CRN 108-31-6

CMF C4 H2 O3



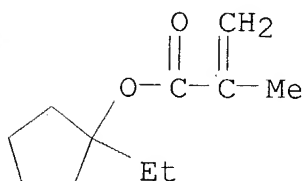
RN 452912-65-1 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with ethenyltrimethylsilane and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 266308-58-1

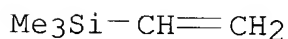
CMF C11 H18 O2



CM 2

CRN 754-05-2

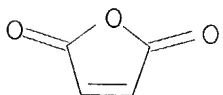
CMF C5 H12 Si



CM 3

CRN 108-31-6

CMF C4 H2 O3



IT 26702-38-5P, Maleic anhydride-trimethylvinylsilane copolymer  
 452912-28-6P, N-Methylmaleimide-trimethylvinylsilane  
 copolymer 452912-32-2P, Maleic anhydride-  
 bis(trimethylsilylmethyl)vinylmethoxysilane) copolymer  
 452912-34-4P, Maleic anhydride-bis(trimethylsilylmethyl)vinyl  
 methoxysilane-1-ethylcyclopentyl methacrylate copolymer  
 452912-65-1P, Maleic anhydride-trimethylvinylsilane-1-  
 ethylcyclopentyl methacrylate copolymer  
 (cured and uncured; silicon-contg. chem. amplification pos.  
 resist compns. and patterning process thereof)

L13 ANSWER 6 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

2002:436099 Document No. 137:343813 Preparation of trimethylsilyl group containing copolymer for negative-type photoresists that enable stripped by an alkaline solution. Chiang, Wen-Yen; Kuo, Hsin-Te (Department of Chemical Engineering, Tatung University, Taipei, 10451, Taiwan). European Polymer Journal, 38(9), 1761-1768 (English) 2002. CODEN: EUPJAG. ISSN: 0014-3057. Publisher: Elsevier Science Ltd..

AB Four copolymers contg. trimethylsilyl group were synthesized by soln. free-radical copolymn. catalyzed by azobisisobutyronitrile (AIBN) in 1,4-dioxane at 60.degree. C. The photoresists formulations contained the copolymer, a photosensitizer (dimethylaminoethyl methacrylate or diethylaminoethyl methacrylate), Michler's ketone and THF solvent. The copolymers had good thermal stability in the photoresist process, and these contg. cyclic maleimide group were the most stable. After irradiation by a deep-UV light and development with mixed solvent (Me iso-Bu ketone:2-propanol = 1:3), the developed patterns showed neg. images and exhibited good adhesion to the silicon wafer without using any adhesion promoter. The resolution of the resists was at least 1.75 .mu.m and the oxygen plasma etching rate was 1/6 of this of the hard-baked HPR-204 resist. These photoresists can be stripped by weak alk. soln. such as sodium carbonate soln. (0.01 wt.%) after exposure. The above photoresists can be used as the top-imaging layers in a bilayer resist process.

IT 26702-38-5DP, Vinyltrimethylsilane-maleic anhydride copolymer, amides, p-aminobenzoic acid 473988-37-3P, Vinyltrimethylsilane-N-(4-carboxyphenyl)maleimide copolymer (prepn. and characterization of copolymers contg. trimethylsilyl groups and lithog. properties of neg. photoresists based on these polymers)

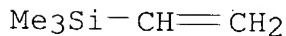
RN 26702-38-5 ZCAPLUS

CN 2,5-Furandione, polymer with ethenyltrimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 754-05-2

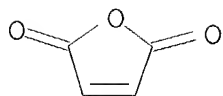
CMF C5 H12 Si



CM 2

CRN 108-31-6

CMF C4 H2 O3



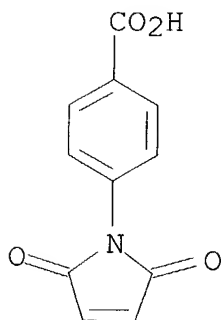
RN 473988-37-3 ZCAPLUS

CN Benzoic acid, 4-(2,5-dihydro-2,5-dioxo-1H-pyrrol-1-yl)-, polymer  
with ethenyltrimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 17057-04-4

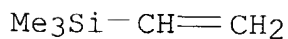
CMF C11 H7 N O4



CM 2

CRN 754-05-2

CMF C5 H12 Si



IT 26702-38-5DP, Vinyltrimethylsilane-maleic anhydride  
copolymer, amides, p-aminobenzoic acid 473988-37-3P,  
Vinyltrimethylsilane-N-(4-carboxyphenyl)maleimide copolymer  
(prepn. and characterization of copolymers contg. trimethylsilyl  
groups and lithog. properties of neg. photoresists based on these  
polymers)

L13 ANSWER 7 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2001:496392 Document No. 135:99845 Positive-working photoresist

composition containing alkali-soluble polymer with silyl group. Mizutani, Kazuyoshi; Yanami, Shoichiro (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001188349 A2 20010710, 52 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-303876 20001003. PRIORITY: JP 1999-298606 19991020.

AB The compn. comprises (A) a binder resin having a repeating unit bearing a structure  $(CH_2)_nSiR_1R_2R_3$  ( $R_1-3$  = alkyl, haloalkyl, halo, alkoxy, trialkylsilyl, trialkylsilyloxy;  $n = 0, 1$ ) and a repeating unit bearing a group which decomps. by the action of an acid and increases the soly. in an alk. developer at the side chain, (B) a compd. generating an acid by the action of an actinic ray or radiation, (C) a solvent dissolving A and B, (D) an org. base compd., (E) .gtoreq.1 surfactant selected from a fluorosurfactant, a silicone surfactant, and a nonionic surfactant. The compn. shows high resoln. and gives patterns with rectangular cross section and is useful for manuf. of semiconductor device.

IT 340829-95-0P

(pos.-working photoresist compn. contg. binder with silyl group, acid generator, org. base, and surfactant)

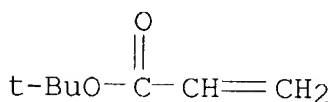
RN 340829-95-0 ZCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 1663-39-4

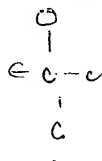
CMF C7 H12 O2



CM 2

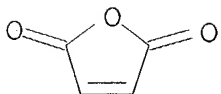
CRN 754-05-2

CMF C5 H12 Si



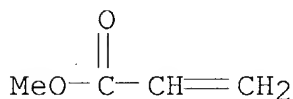
CM 3

CRN 108-31-6  
CMF C4 H2 O3



CM 4

CRN 96-33-3  
CMF C4 H6 O2

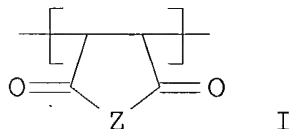


IT 340829-95-0P

(pos.-working photoresist compn. contg. binder with silyl group, acid generator, org. base, and surfactant)

L13 ANSWER 8 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
2001:496391 Document No. 135:99844 Positive-working photoresist composition containing vinyl copolymer with silyl group. Mizutani, Kazuyoshi; Yasunami, Shouichiro (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001188348 A2 20010710, 42 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-303875 20001003. PRIORITY: JP 1999-298606 19991020.

GI



AB The photoresist compn. comprises (A) a binder resin whose soly. in an alk. developer increases by the action of an acid and having repeating units  $\text{CH}_2\text{CH}[(\text{CH}_2)_n\text{SiR}_1\text{R}_2\text{R}_3]$  ( $\text{R}_1\text{-3}$  = alkyl, haloalkyl, halo, alkoxy, trialkylsilyl, trialkylsilyloxy;  $n = 0, 1$ )  $\text{CH}_2\text{CY}(\text{LCO}_2\text{Q})$  ( $\text{Y} = \text{H, Me, cyano, Cl}$ ;  $\text{L} = \text{bond, divalent linkage,}$ ;  $\text{Q} = \text{C5-20 tert-alkyl, alkoxymethyl, alkoxyethyl, isobornyl}$ ) and I ( $\text{Z} = \text{O, NR}_3$ ;

R3 = H, OH, alkyl, OSO2R4; R4 = alkyl, trihalomethyl), (B) a compd. generating an acid by the action of an actinic ray or radiation, and (C) a solvent dissolving A and B. The compn. shows high resoln., less disappearance of rough pattern at the resoln. limit, and is useful for manuf. of semiconductor devices.

IT 348137-37-1P

(pos.-working photoresist compn. contg. vinyl copolymer with silyl group and acid generator)

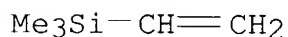
RN 348137-37-1 ZCAPLUS

CN 2-Propenoic acid, 2-ethoxyethyl ester, polymer with ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI)  
(CA INDEX NAME)

CM 1

CRN 754-05-2

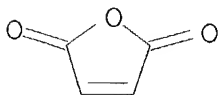
CMF C5 H12 Si



CM 2

CRN 108-31-6

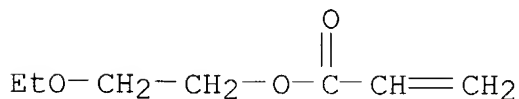
CMF C4 H2 O3



CM 3

CRN 106-74-1

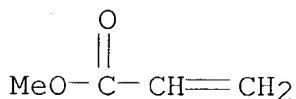
CMF C7 H12 O3



CM 4



CRN 96-33-3  
CMF C4 H6 O2



IT 348137-37-1P

(pos.-working photoresist compn. contg. vinyl copolymer with silyl group and acid generator)

L13 ANSWER 9 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

2001:377058 Document No. 135:12103 Positive-working photoresist composition containing specific acid-sensitive resin and specific solvent for semiconductor device fabrication. Sato, Kenichiro; Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001142211 A2 20010525, 49 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-319836 19991110.

AB The title compn. contains an acid-sensitive resin solubilized in alkali, an actinic ray-sensitive acid generator, and a mixed solvent, wherein the resin has repeating unit  $[\text{CH}_2\text{CH}(\text{CH}_2)_n\text{Si}(\text{R}_1)(\text{R}_2)(\text{R}_3)]$  (R1-3 = alkyl, haloalkyl, halo, etc.; n = 0, 1) and  $[-\text{CH}_2\text{C}(\text{Y})(\text{LCO}_2\text{Q})-]$  (Y = H, Me, cyano, Cl; L = single bond, 2-valent connecting group; Q = H, acid-sensitive protecting group) or  $[\text{CH}(\text{COX}_2\text{-L}_2\text{-A}_2)-\text{CH}(\text{COX}_2\text{-L}_2\text{-A}_2)]$  (X1-2 = O, S, NH, etc.; L1-2 = single bond, 2-valent connecting group; A1 = H, carboxyl protected with acid-sensitive group; A2 = H, CN, OH, etc.) and wherein the mixed solvent contains an alkyl lactate, another ester, and alkoxyalkylpropionate. The compn., which contains the acid-sensitive resin and the mixed solvent, provides the photoresist of the improved edge roughness.

IT 340829-95-0P 340960-59-0P

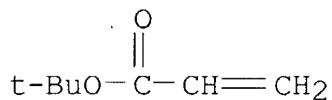
(pos.-working photoresist compn. contg. specific acid-sensitive resin and specific solvent for semiconductor device fabrication)

RN 340829-95-0 ZCAPLUS

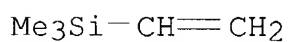
CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI)  
(CA INDEX NAME)

CM 1

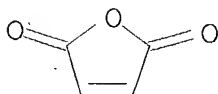
CRN 1663-39-4  
CMF C7 H12 O2



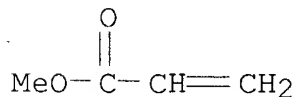
CM 2

CRN 754-05-2  
CMF C5 H12 Si

CM 3

CRN 108-31-6  
CMF C4 H2 O3

CM 4

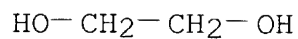
CRN 96-33-3  
CMF C4 H6 O2

RN 340960-59-0 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, tetrahydro-2H-pyran-2-yl ester, polymer  
with ethenyltrimethylsilane and 2,5-furandione, 2-hydroxyethyl  
methyl ester (9CI) (CA INDEX NAME)

CM 1

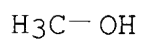
CRN 107-21-1  
CMF C2 H6 O2



CM 2

CRN 67-56-1

CMF C H4 O



CM 3

CRN 340960-58-9

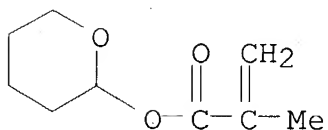
CMF (C9 H14 O3 . C5 H12 Si . C4 H2 O3)x

CCI PMS

CM 4

CRN 52858-59-0

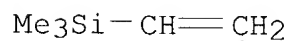
CMF C9 H14 O3



CM 5

CRN 754-05-2

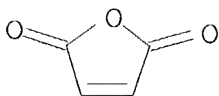
CMF C5 H12 Si



CM 6

CRN 108-31-6

CMF C4 H2 O3



IT 340829-95-0P 340960-59-0P

(pos.-working photoresist compn. contg. specific acid-sensitive resin and specific solvent for semiconductor device fabrication)

L13 ANSWER 10 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

2001:377057 Document No. 135:12102 Positive-working photoresist composition containing specific acid-sensitive resin and specific solvent for semiconductor device fabrication. Sato, Kenichiro; Mizutani, Kazuyoshi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001142210 A2 20010525, 47 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-319835 19991110.

AB The title compn. contains an acid-sensitive resin solubilized in alkali, an actinic ray-sensitive acid generator, and a solvent contg. heptanone, wherein the resin has repeating unit  $[\text{CH}_2\text{CH}(\text{CH}_2)_n\text{-Si}(\text{R}_1)(\text{R}_2)(\text{R}_3)]$  ( $\text{R}_1\text{-3}$  = alkyl, haloalkyl, halo, etc.;  $n = 0, 1$ ) and  $[-\text{CH}_2\text{C}(\text{Y})(\text{LCO}_2\text{Q})-]$  ( $\text{Y} = \text{H}, \text{Me}, \text{cyano}, \text{Cl}$ ;  $\text{L}$  = single bond, 2-valent connecting group;  $\text{Q} = \text{H}$ , acid-sensitive protecting group) or  $[\text{CH}(\text{COX}_2\text{-L}_2\text{-A}_2)\text{-CH}(\text{COX}_2\text{-L}_2\text{-A}_2)]$  ( $\text{X}_1\text{-2} = \text{O}, \text{S}, \text{NH}$ , etc.;  $\text{L}_1\text{-2}$  = single bond, 2-valent connecting group;  $\text{A}_1 = \text{H}$ , carboxyl protected with acid-sensitive group;  $\text{A}_2 = \text{H}, \text{CN}, \text{OH}$ , etc.). The compn., which contains the acid-sensitive resin and the solvent, provides the photoresist of the improved edge roughness.

IT 340829-95-0P 340960-59-0P

(pos.-working photoresist compn. contg. specific acid-sensitive resin and specific solvent for semiconductor device fabrication)

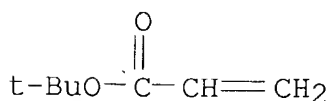
RN 340829-95-0 ZCAPLUS

CN 2-Propenoic acid, 1,1-dimethylethyl ester, polymer with ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI) (CA INDEX NAME)

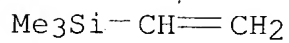
CM 1

CRN 1663-39-4

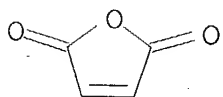
CMF C7 H12 O2



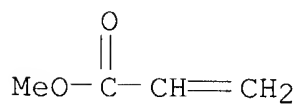
CM 2

CRN 754-05-2  
CMF C5 H12 Si

CM 3

CRN 108-31-6  
CMF C4 H2 O3

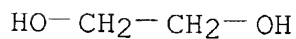
CM 4

CRN 96-33-3  
CMF C4 H6 O2

RN 340960-59-0 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, tetrahydro-2H-pyran-2-yl ester, polymer  
with ethenyltrimethylsilane and 2,5-furandione, 2-hydroxyethyl  
methyl ester (9CI) (CA INDEX NAME)

CM 1

CRN 107-21-1  
CMF C2 H6 O2

CM 2

CRN 67-56-1

CMF C H4 O

H<sub>3</sub>C-OH

CM 3

CRN 340960-58-9

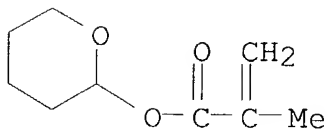
CMF (C9 H14 O3 . C5 H12 Si . C4 H2 O3)x

CCI PMS

CM 4

CRN 52858-59-0

CMF C9 H14 O3



CM 5

CRN 754-05-2

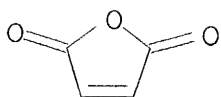
CMF C5 H12 Si

Me<sub>3</sub>Si-CH=CH<sub>2</sub>

CM 6

CRN 108-31-6

CMF C4 H2 O3



IT 340829-95-0P 340960-59-0P

(pos.-working photoresist compn. contg. specific acid-sensitive resin and specific solvent for semiconductor device fabrication)

L13 ANSWER 11 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

2001:319605 Document No. 134:334291 Positive-working photoresist composition. Sato, Kenichiro; Mizutani, Kazuyoshi; Yasunami, Shoichiro (Fuji Photo Film Co., Ltd., Japan). Eur. Pat. Appl. EP 1096319 A1 20010502, 80 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-123359 20001030. PRIORITY: JP 1999-309587 19991029; JP 1999-319837 19991110.

AB The invention relates to a pos.-working photoresist compn. for use in the prodn. of semiconductor integrated circuit element, mask for the prodn. of integrated circuit, printed wiring board, liq. crystal panel, etc. The photoresist compn. comprises (a) a resin comprising the specific repeating structural units which resin increases in its soly. in an alk. developer when acted upon by an acid, (b') an onium salt compd. which generates an acid when irradiated with active ray or radiation and (c) .gtoreq.1 of F-based and/or Si-based surface active agent and nonionic surface active agent or a pos.-working photoresist compn. comprises (a) a resin comprising the specific repeating structural units which resin increases in its soly. in an alk. developer when acted upon by an acid, (b) a compd. which generates an acid when irradiated with active ray or radiation, and (d) a mixed solvent contg. .gtoreq.1 propylene glycol monoalkyl ether carboxylate and .gtoreq.1 of solvents selected from the group consisting of propylene glycol monoalkyl ether, alkyl lactate and alkoxyalkyl propionate and solvents selected from the group consisting of .gamma.-butyrolactone, ethylene carbonate and propylene carbonate.

IT 336609-17-7P 336609-28-0P

(synthesis of resin having high soly. in alk. developer for photoresist compn. used in manuf. of semiconductor integrated circuit element)

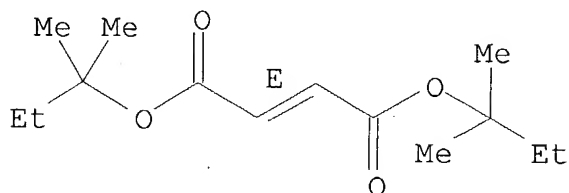
RN 336609-17-7 ZCAPLUS

CN 2-Butenedioic acid (2E)-, bis(1,1-dimethylpropyl) ester, polymer with ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI) (CA INDEX NAME)

CRN 100829-27-4

CMF C14 H24 O4

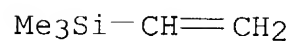
Double bond geometry as shown.



CM 2

CRN 754-05-2

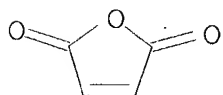
CMF C5 H12 Si



CM 3

CRN 108-31-6

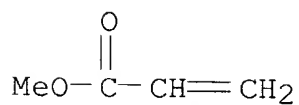
CMF C4 H2 O3



CM 4

CRN 96-33-3

CMF C4 H6 O2





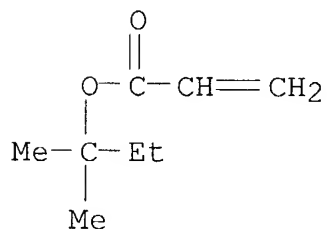
RN 336609-28-0 ZCAPLUS

CN 2-Propenoic acid, 1,1-dimethylpropyl ester, polymer with  
ethenyltrimethylsilane, 2,5-furandione and methyl 2-propenoate (9CI)  
(CA INDEX NAME)

CM 1

CRN 7383-26-8

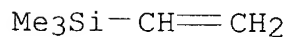
CMF C8 H14 O2



CM 2

CRN 754-05-2

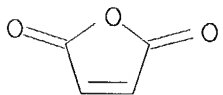
CMF C5 H12 Si



CM 3

CRN 108-31-6

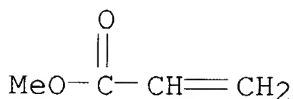
CMF C4 H2 O3



CM 4

CRN 96-33-3

CMF C4 H6 O2



IT 336609-17-7P 336609-28-0P

(synthesis of resin having high soly. in alk. developer for photoresist compn. used in manuf. of semiconductor integrated circuit element)

L13 ANSWER 12 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

1995:695949 Document No. 123:97947 Photoresist composition suitable for KrF excimer laser and patterning. Kodachi, Akiko; Takechi, Satoshi (Fujitsu Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07036188 A2 19950207 Heisei, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-178903 19930720.

AB The title compn. comprises a resin represented by (R1C:CR2) (R1 = H, alkyl, Ph, halo, halogenated alkyl, halogenated Ph; R1 may contain Si; R2 = .gtoreq.1 Si-contg. alkyl, Ph, halogenated alkyl, halogenated Ph, alkoxy) and an acid-generating agent upon irradiation of light. Preferably, R2 = Si(Me)3 or Si(Me)3CH2Si(Me)3. The title patterning comprises developing with an alkali soln.

IT 165249-76-3P

(photoresist compn. suitable for KrF excimer laser and patterning)

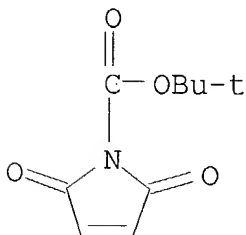
RN 165249-76-3 ZCAPLUS

CN 1H-Pyrrole-1-carboxylic acid, 2,5-dihydro-2,5-dioxo-, 1,1-dimethylethyl ester, polymer with 1H-pyrrole-2,5-dione and trimethyl-1-propenylsilane (9CI) (CA INDEX NAME)

CM 1

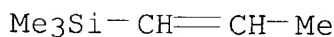
CRN 114650-82-7

CMF C9 H11 N O4



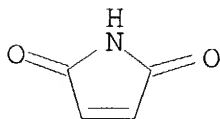
CM 2

CRN 17680-01-2  
CMF C6 H14 Si



CM 3

CRN 541-59-3  
CMF C4 H3 N O2



IT 165249-76-3P  
(photoresist compn. suitable for KrF excimer laser and patterning)

L13 ANSWER 13 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
1994:65716 Document No. 120:65716 A novel silicon-containing copolymer for a resist highly etching-resistant to oxygen plasma. Chiang, Wen Yen; Lu, Jin Yuh (Dep. Chem. Eng., Tatung Inst. Technol., Taipei, 10451, Taiwan). Angewandte Makromolekulare Chemie, 209, 25-32 (English) 1993. CODEN: ANMCBO. ISSN: 0003-3146.

AB A new copolymer, poly(maleimide-alt-trimethylvinylsilane) (PMVS), with a high silicon content was synthesized by free-radical copolymn., in order to obtain a pos. photoresist contg. diazonaphthoquinone sulfonate as a dissoln. inhibitor. PMVS shows a high etching selectivity of 1:16 compared to a com. available, hard-baked photoresist (HPR-204). In addn., the rigid cyclic maleimide group is responsible for high temp. stability.

IT 150883-82-2  
(photoresist contg. diazonaphthoquinone sulfonate and, for high etching resistance to oxygen plasma)

RN 150883-82-2 ZCAPLUS

CN 1H-Pyrrole-2,5-dione, polymer with ethenyltrimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 754-05-2

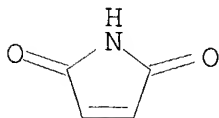
CMF C5 H12 Si

 $\text{Me}_3\text{Si}-\text{CH}=\text{CH}_2$ 

CM 2

CRN 541-59-3

CMF C4 H3 N O2

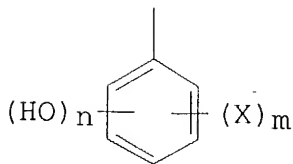


IT 150883-82-2

(photoresist contg. diazonaphthoquinone sulfonate and, for high etching resistance to oxygen plasma)

L13 ANSWER 14 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1993:157904 Document No. 118:157904 photosensitive polymer with  
 2-diazo-1,3-dicarbonyl groups for positive-working recording  
 material. Roeschert, Horst; Merrem, Hans Joachim; Pawlowski, Georg;  
 Fuchs, Juergen; Dammel, Ralph (Hoechst A.-G., Germany). Eur. Pat.  
 Appl. EP 501294 A1 19920902, 22 pp. DESIGNATED STATES: R: AT, BE,  
 CH, DE, ES, FR, GB, IT, LI, NL, SE. (German). CODEN: EPXXDW.  
 APPLICATION: EP 1992-102734 19920219. PRIORITY: DE 1991-4106357  
 19910228.

GI



I

AB The title material comprises a polymer contg. the groups I [X =  
 alkyl, alkoxyalkyl, carboxy, formyl, alkoxy-carbonyl, alkanoyl,  
 alkynoyloxy, alkoxy, halogen; m = 0-2; n = 1, 2] and I esterified

with 2-diazo-1,3-dicarbonyl compd. where the ratio between the nonester and ester components is 98:2-0:100.

IT 146268-68-0DP, 2-diazo-2-phenylethyl-1,3-dione derivs.  
(prepn. and use of, in photosensitive compns. for recording materials)

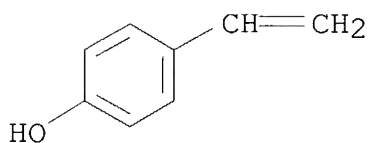
RN 146268-68-0 ZCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 4-ethenylphenol and ethenyltrimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 2628-17-3

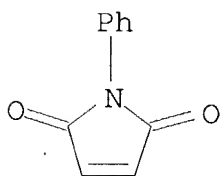
CMF C8 H8 O



CM 2

CRN 941-69-5

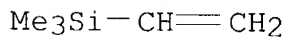
CMF C10 H7 N O2



CM 3

CRN 754-05-2

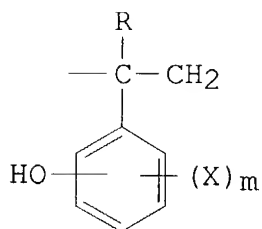
CMF C5 H12 Si



IT 146268-68-0DP, 2-diazo-2-phenylethyl-1,3-dione derivs.  
(prepn. and use of, in photosensitive compns. for recording materials)

L13 ANSWER 15 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN  
 1993:136247 Document No. 118:136247 Radiation-sensitive polymers with  
 naphthoquinone-2-diazide-4-sulfonyl group and their use in  
 positive-working photosensitive compositions. Roeschert, Horst;  
 Merrem, Hans Joachim; Pawlowski, Georg; Fuchs, Juergen; Dammel,  
 Ralph (Hoechst A.-G., Germany). Eur. Pat. Appl. EP 501308 A1  
 19920902, 16 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB,  
 IT, LI, NL, SE. (German). CODEN: EPXXDW. APPLICATION: EP  
 1992-102838 19920220. PRIORITY: DE 1991-4106356 19910228.

GI



AB The title material comprises a polymer contg. the groups I [X =  
 alkyl, alkoxyalkyl, carboxy, formyl, alkoxy carbonyl, alkanoyl,  
 alkynoyloxy, alkoxy, halogen; R = H, alkyl; m = 0-2] and I  
 substituted with naphthoquinone-2-diazide-4-sulfonyl, where the  
 ratio between nonester and ester components is 98:2-75:25. The  
 photosensitive binder can be used in a pos.-working photosensitive  
 compn.

IT **146478-12-8P**

(prepn. and use of, in photosensitive compn.)

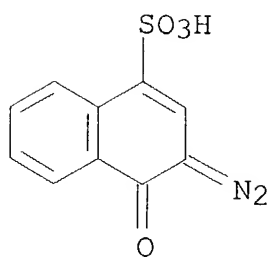
RN 146478-12-8 ZCAPLUS

CN 1H-Pyrrole-2,5-dione, 1-phenyl-, polymer with 4-ethenylphenol and  
 ethenyltrimethylsilane, 3-diazo-3,4-dihydro-4-oxo-1-  
 naphthalenesulfonate (9CI) (CA INDEX NAME)

CM 1

CRN 20680-48-2

CMF C10 H6 N2 O4 S



CM 2

CRN 146268-68-0

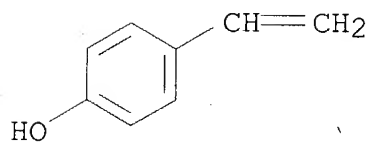
CMF (C10 H7 N O2 . C8 H8 O . C5 H12 Si)x

CCI PMS

CM 3

CRN 2628-17-3

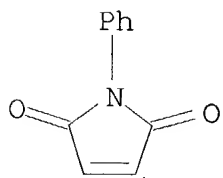
CMF C8 H8 O



CM 4

CRN 941-69-5

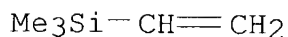
CMF C10 H7 N O2



CM 5

CRN 754-05-2

CMF C5 H12 Si



IT 146478-12-8P

(prepn. and use of, in photosensitive compn.)

L13 ANSWER 16 OF 16 ZCAPLUS COPYRIGHT 2004 ACS on STN

1970:111892 Document No. 72:111892 Cyclocopolymerization. VI.

Copolymerization of trimethylvinylsilane and dimethyldivinylsilane with maleic anhydride. Butler, George Bergen; Campus, Alfred F. (Dep. of Chem., Univ. of Florida, Gainesville, FL, USA). Journal of Polymer Science, Polymer Chemistry Edition, 8(2), 523-32 (English) 1970. CODEN: JPLCAT. ISSN: 0449-296X.

AB In the copolymn. of trimethylvinyl-silane and dimethyldivinylsilane, resp., with maleic anhydride the former forms a 1:1 alternating copolymer while the latter, being a 1,4-pentadiene, forms a 1:2 cyclocopolymer. Consistent with the theory that charge-transfer complexes are involved in certain copolymns., both of the vinylsilanes studied form charge-transfer complexes with maleic anhydride. The stoichiometric compn. of these complexes were shown by uv anal. to be 1:1 molar complexes. The equil. consts. for complexation of trimethylvinylsilane and dimethyldi vinylsilane with maleic anhydride were detd. by NMR and are 0.061 and 0.1071./mole, resp.

IT 26702-38-5P

(prepn. of, chain-transfer and ring closure in)

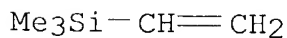
RN 26702-38-5 ZCAPLUS

CN 2,5-Furandione, polymer with ethenyltrimethylsilane (9CI) (CA INDEX NAME)

CM 1

CRN 754-05-2

CMF C5 H12 Si

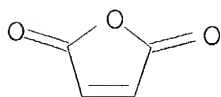


CM 2

CRN 108-31-6

CMF C4 H2 O3





IT 26702-38-5P  
(prepn. of, chain-transfer and ring closure in)